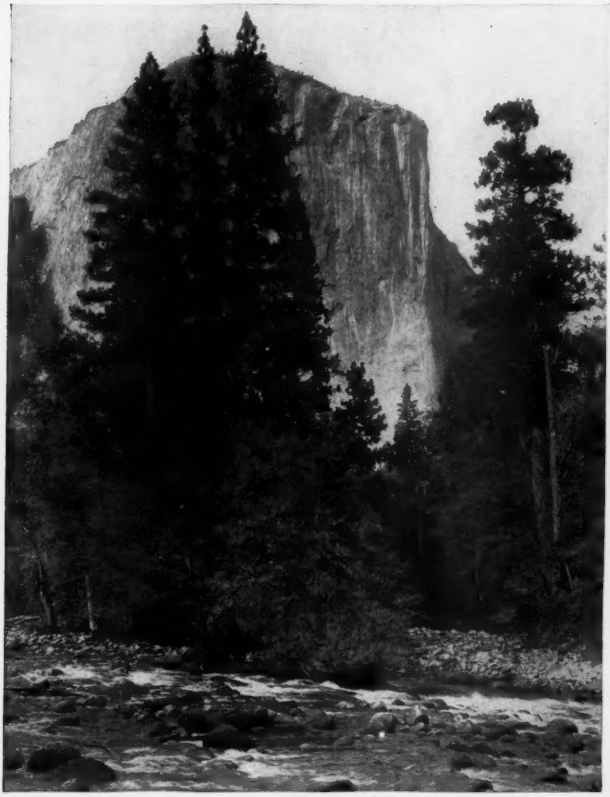
THE DENTAL DIGEST



APRIL, 1927
VOL. XXXIII, No. 4

GEORGE WOOD CLAPP, D.D.S., EDITOR
PUBLISHED BY
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THE
DENTAL DIGEST

Vol. XXXIII APRIL, 1927 No. 4

Two Views of Focal Infection From a Dental Standpoint

By U. Garfield Rickert, M.A., D.D.S., Ann Arbor, Mich.

Professor of Physiological Chemistry and Hygiene, College of Dental Surgery, University of Michigan

The rapid and effective organization, the increased educational status, the broadened conceptions of dentistry resulting from the knowledge that we are concerned with the general health of our patients, all are recent and phenomenal achievements to which the dental profession may well turn with considerable pride. The outstanding single influence paving the way to these broader conceptions and the general Renaissance in dentistry had its inception and continued interest in the problems related to pulp-involved teeth. In fact, a prominent dental educator recently said that he hoped that the subject relative to the pulpless tooth would never be solved because of its stimulating influence on the practice of dentistry.

Personally, I believe that the increased scope for study and research made possible by the information we have gained in regard to the serious secondary effects that are at times initiated because of inadequate practices has introduced so many new subjects for study that those interested in dental research will have sufficient work with which to busy themselves for many years to come. If, though, the profession should become panic-stricken by the alarms of the extremists and admit defeat in its first real biological problem (I am quite certain it never will), immediate progress would be in reverse gear until some future generation, when either dentistry or general surgery could meet and solve the problem more constructively. With the encouragement of that fortunately large sane and stable element of the profession the limited number of research-workers that we have at present will be able to carry on the work until some of the hundreds of young dentists now in the making, who will be better trained in the fundamental sciences and better prepared to cope with the scientific aspects of advanced dentistry, can relieve the situation.

I do not wish to assume the rôle of a debater. The subject of focal infection as related to the problem of root-filled teeth is not debatable. The early Greek philosophers used to debate and, after several weeks

of heated arguments, decide questions like the following: "If an angel does not occupy space, how many can sit on the point of a needle at one time?" In that day discussions followed by vote settled big questions, but in this age of science our problems are not solved in that way. It is to be hoped that all of us may profit by an open-minded exchange of views as derived from our individual laboratory and clinical experiences. We are aiming at the clarification of some of the more obscure aspects of our problem. There was a time when the discrepancies of laboratory results were much more pronounced than they are at present. With the passing of the ill-advised and one-sided investigations the atmosphere is cleared for sane thinking. Our differences at the present time are more imaginary than real. What differences there are are due rather to the differences of the conditions under which the observations are taken.

Dr. Haden has made a scientific contribution*, and it becomes valuable only to the extent that it is correctly interpreted by the profession. While we have not prosecuted investigations in all the details on so large a scale as presented by Dr. Haden, we have done enough experimental work to prove to our own satisfaction that if the cases are carefully selected from hospital groups, Dr. Haden's results can be verified in practically all of the more essential details. The knowledge that apparent localizations can frequently be produced in laboratory animals has its place in the solution of our problem, provided it is presented in its true proportion and proper perspective; otherwise it becomes a dangerous teaching, in that it fails to play a constructive part in the sane solution of our problem. The clinical significance of elective localization has been considerably overestimated in certain sections. Until more work has been done, and until we have better controlled evidence than we have at the present time, the subject remains as one of laboratory interest. If there are differences of viewpoints at the present time between Dr. Haden and myself, such differences are due rather to interpretation than to laboratory results.

I believe that I have been quite fortunate in the environment and conditions under which I have been able to study this problem. For the past ten years it has been possible to move at will, without leaving the city of Ann Arbor, into two entirely different worlds, one a large dental clinic, where thousands are annually given dental treatment. The large majority of these patients have one or more pulpless teeth and from the conceptions of the ultra-progressives should, in theory at least, be sick, dying or dead, but from their own opinions they think they are well. Ten years ago, with a view to broadening my concep-

* In a paper read by Russell L. Haden, M.D., Kansas City, Mo., before the First District Dental Society, New York, in December, 1926, and to which Dr. Rickert refers, Dr. Haden supports Rosenow's theory of elective localization and shows himself a firm believer that many systemic diseases are cured by the extraction of pulpless teeth.

tions of dental problems, I went into the examining room of this dental clinic and continued in that position until I had examined approximately 32,000 patients.

We have within a half-mile another little world—the large hospitals, both private and State, with hundreds of beds, in which patients available for study from the hospital standpoint are always present. When patients are carefully selected from the hospital group, our laboratory data read quite like those of Dr. Haden. If, on the other hand, the patients are selected from the dental clinic group, the pictures drawn by Dr. Haden's work are seldom if ever demonstrable. The two entirely different groups of patients with which we have been working during the reconstruction period have made it necessary for us, for the time at least, as Dr. C. J. Lyons states it, to practice two kinds of dentistry, radical and conservative.

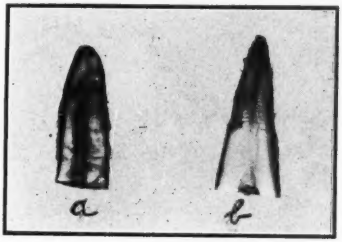


Fig. 1

a illustrates the suppressed capacity for diffusion in a well sealed root end. *b* illustrates the diffusion that takes place through the cementum of the apical end in the absence of a complete root filling in that region. The foramina must be sealed previous to this treatment, otherwise the silver solution will pass into the canal in this way and defeat the experiment. The extent of permeable cementum decreases with age.

My earlier studies were carried on largely in the little world of dental clinic patients, and I frankly confess that I came very near being misled, because in this environment I could not see the complete perspective. It must be obvious to you that, no matter how carefully we did our work, under the entirely different conditions our results would not check with those of the hospital-workers. I have gone somewhat into detail in the explanation of our present conception because I am quite aware that those who have followed my work have been unable to reconcile some of my research reports with some of my more general discussions that have been published from time to time. We appreciate that there are two distinct sides to this question. If all our patients were serious, hospitalized cases, our practices would approximate those of the hundred-per-cent advocates, but fortunately this

group constitutes only a very small percentage of the people with pulp-involved teeth, so that the application of the same methods in the second group, as authorized by any authentic work that has appeared as yet, would be unwarranted. When we reason that only a small percentage of hospital patients are there because of pulpless teeth, the number of patients from which localizations can be demonstrated in terms of the whole populace becomes almost a negligible factor. When I consider the health of the masses of people who are subjected to the most inadequate surgery ever practiced on a large scale and still live, I have faith in the results of improved methods. I shall continue to study the problem for the refinement of technic until it is proved that I am dealing with an impossible condition, which to date has not been accomplished.

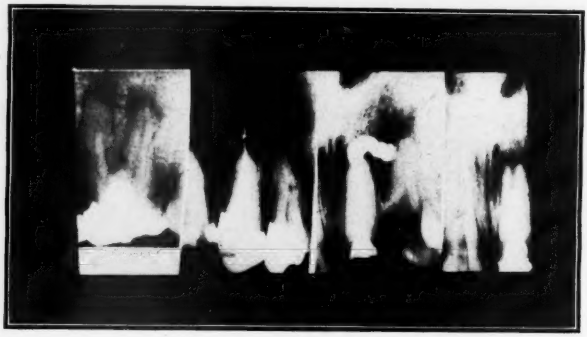


Fig. 2

The "dead" tooth—the supposedly root-filled tooth. This is the kind of root surgery that has rightfully subjected the practice to severe criticism. This is not surgery—it is root-canal bungling, altogether too common a practice during the recent past. We object to the use of *pulpless teeth* as synonymous with the type of surgery shown above.

That you may better understand my present position relative to the management of pulpless teeth, I will present a brief review of the rather well established facts that in my opinion must be kept in mind when we are undertaking the operation. With open mind I have studied many cases, from both the clinical and the laboratory standpoints, and the results of these investigations have led me to the following conclusions: (1) that past methods of root-canal surgery have been inadequate and have permitted too many subsequent infections; (2) that infected pulps and periapical foci do at times initiate secondary infections under conditions not as yet well understood; (3) that such foci are more often contributing, rather than initiating, factors to

other infective involvements; (4) that the type reaction of the patient and the number of such teeth present with respect to the age of the patient are most important factors; (5) that we seldom find a definite secondary effect from a single pulpless tooth in the early twenties, but, at the other extreme, we seldom find patients in the late forties with a large number of poorly treated pulpless teeth who, if suffering from apparent secondary invasions, are not favorably affected by the removal of all such teeth; (6) that the number of times we have observed one infected, vital, degenerating pulp initiate secondary effects has been more frequent than that of the poorly treated, pulpless tooth; (7) that this is especially true with patients past thirty years of age.

The few cases where definite relations were established between a single, vital degeneration and an inadequately treated pulpless tooth of otherwise healthy patients in the early twenties involved the eyes

Fig. 3

The patient, a dentist, presented with five dead and infected pulps. All were treated until several negative cultures were obtained. All were filled with a non-opaque root-filling material. Gutta-percha points were forced into the plastic filling material to replace the shrinkage made by the withdrawal of the filling instrument. All were cultured and refilled at intervals of eighteen months and were negative. The second bicuspid will be the last one and will be cultured with the new and opaque root filling in about a year. The large rarefied areas all disappeared. The cultures were negative over a period of five years and the patient is in excellent health. He complained of being tired at all times just previous to treatment. What more can we do to prove that we are not dealing with an impossible condition? Many teeth have been treated and subsequently cultured with similar results. These are shown here because of the large number in one case, and because the patient is a dentist.

in nearly all cases. The frequency with which pure cultures of enteric organisms are isolated from carefully cultured roots leads us to suspect the intestinal tract as a much more common source of metastatic invasions than either the medical or the dental students of the subjects have believed it to be, for pure cultures, singly or in combination, of enterococcus, B. Coli and Proteus organisms, not normal inhabitants

of the mouth, are frequently found in root-end infections, which suggests that traumatized teeth may at times be secondary foci of infections. This explains why frequently we do not have the recoveries which we anticipate following extraction.

Carrying the thought still farther, you may well ask at this time: "With this extensive and apparently unprejudiced investigation, where do you stand today with respect to the pulpless tooth? Are you more or are you less afraid of the situation than you were five years ago?"

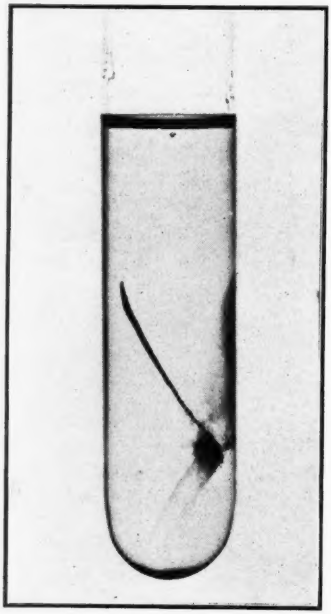


Fig. 4

This represents a cotton point in a semi-solid culture medium. Observe the infection at the very point and the spreading from this region. This proves that there was no contamination, for if there had been, the growth would have emanated from all of that part that had been within the canal, and it also indicates the sterility of the canal in all but the very apical end.

My answer is, "The more one studies the problem from all angles, the less terrifying it becomes." We would not have you infer from this statement that we are encouraging the retention of infected teeth, for all deep-seated foci of infection, regardless of the tissues in which they are found, should be removed when and wherever possible. My optimism is due rather to the powerful evidence that we have gained

from experiences giving us assurance that many such teeth, if adequately treated immediately following pulp extirpation, can be safely managed by measures less destructive than extraction.

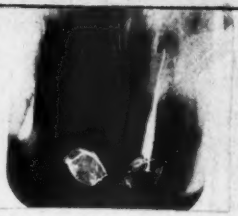
There must be no severe criticism of those who at times in the past questioned the legitimacy of former root-canal practices, for if the truth were known, there are but few of us who, having large institutional and laboratory experiences, have not had moments when we too were quite in sympathy with the more radical tendencies. It could well have been anticipated that the more radical, progressive tendencies would come from the clinics where the operator was constantly observing the sick. On the other hand, we have had a few of those painstaking, experienced operators who have had sufficient time to observe the results of their root-canal surgery, and one could hardly expect them to be driven into an extraction hysteria, for they seldom see the more demonstrable associations of the teeth with systemic involvements. Fortunately we are fast getting onto common ground, so that at this time there are few leaders of thought in the profession who are not aware of the limitations of the wholesale and inadequate treatment of pulp-involved teeth, and also conscious of the tragedy of promiscuous extractions. The majority of sane and stable operators are marking time; they are speaking conservatively about the subject, because they hope that more adequate methods for treating pulp-involved teeth will soon be available if the workers in this field are encouraged. Briefly stated, in their private practices they are often more radical than in their public utterances. In the present stage of development this state of affairs is justifiable. The problem is sufficiently serious so that no dentist should undertake the operation who is unwilling to revise his technic to conform with the broader conceptions of the problem.

At this time we desire to present several fundamentals that have been entirely overlooked and have been the cause of a large part of our failures.

Fundamentals Essential to Successful Root-Canal Surgery

Strictly speaking, from an operative standpoint, we have, in our past practices, generally disregarded the permeable end of the tooth. The cementum of the root in the majority of teeth is practically impermeable, with the exception of varying distances from the apical end toward the gingivae. The extent of permeable cementum varies with the age of the patient. In the younger patients it involves a greater portion of the root end than it does in the well-formed roots of older patients. From radiograms and from extracted teeth can be observed the extent of cementum sufficiently permeable to involve the enveloping periapical tissues seriously. From the radiogram, if taken at the

HEALTH OF THE PATIENT



Mrs. W, age 22

	PATIENT	FATHER	MOTHER	BROTHER	SISTER	FATHER'S MOTHER	FATHER'S FATHER	MOTHER'S FATHER	MOTHER'S MOTHER	UNCLES	AUNTS
HEART	∓		∓						∓		
BLOOD PRESSURE											
ANEMIA											
RHEUMATISM	+										
SWOLLEN JOINTS	+										
NEURITIS											
MYOSITIS											
TONSILITIS	∓										
TUBERCULOSIS											
PNEUMONIA	+										
INFLUENZA	+										
MASTOID 2 attacks	+										
SINUS											
DIGESTION											
CONSTIPATION											
APPENDICITIS											
NEPHRITIS											
DIABETES											
NERVOUS DEBILITY											
GENERAL HEALTH General Debility	∓										
AGE IF LIVING		52	41				Odon				
AGE OF DEAD								25	22		
GENERAL CONDITION OF TEETH											
REMARKS Patient had 1 pulpless tooth extracted besides one shown on this chart.											

Fig. 5

This case represents one extreme, and Fig. 6 the other. There should be no difficulty for the operator to decide what should be done in either case. The decisions that must be made between these extremes must be determined by the judgment and experience of the individual operator, for the present. The dentist told the patient, when the pulp died several weeks after seating the jacket crowns, that the case would be cured after lancing. The acute condition was only temporarily relieved, so treatment was undertaken. The pains were relieved, but the dentist told the patient that he understood the case better than any one else could and insisted that under no condition should she go to any one else in case of further trouble. He did not tell her that he had left about one cm. of broach in

the canal, because it was too soon after seating the beautiful crowns. Both grandparents on the mother's side died before 25 years of age. Study the history of the patient. This approximates malpractice.

HEALTH OF THE PATIENT

R. N., Chelsea, Mich
Age 38

	PATIENT	FATHER	MOTHER	BROTHER	SISTER	FATHER'S FATHER	FATHER'S MOTHER	MOTHER'S FATHER	MOTHER'S MOTHER	UNCLES	AUNTS
HEART											
BLOOD PRESSURE											
ANEMIA											
RHEUMATISM											
SWOLLEN JOINTS											
NEURITIS											
MYOSITIS											
TONSILITIS											
TUBERCULOSIS											
PNEUMONIA	± Wartime										
INFLUENZA											
MASTOID											
SINUS											
DIGESTION											
CONSTIPATION											
APPENDICITIS											
NEPHRITIS											
DIABETES											
NERVOUS DEBILITY											
GENERAL HEALTH	Excellent										
AGE IF LIVING		57	48			86	82	47	78		
AGE OF DEAD											
GENERAL CONDITION OF TEETH											
REMARKS	Question pulp removal of nearly exposed lower 2nd bicuspid										

Fig. 6

The other extreme (see Fig. 5). Observe the family history. It was a question of root filling in the lower second bicuspid, following accidental exposure by a student in the dental clinic. Notice the difference in health of the patient and the difference in the family history. Adequate root-canal surgery is surely indicated here. Observe that I say "adequate." While bungling would probably be tolerated in this case, it is not advised.

proper angle, one can view the projection of the apex into the translucent area. Generally speaking, the length of this projection is determined by the age of the patient at the time of pulp extirpation. The granuloma (misnamed) covering this permeable cementum furnishes a natural reaction and barrier against the further diffusion of circulatory elements that have become toxic during the retarded diffusion through the root end. In the vital tooth the movement of these circulatory elements is sufficient to prevent the elements from becoming toxic. Such toxicity may develop, even in the absence of infection, in the presence of certain foreign bodies.*

Dr. Price also has evidence of toxins made from infusions of old pulpless roots. The reaction of the patients for the occlusion of toxicity in the critical end of the root also varies. In some of the more highly resistant types we have the formation of the granuloma. In the arthritic types, though, it appears that the natural attempt at occlusion is more frequently expressed by hypercementosis, a reaction which prevents diffusion, as has been shown in our laboratory, in all but the very apical end surrounding the foramina of the root, which is usually highly susceptible to infection.

While the permeable cementum has been demonstrated in various ways by Box, Cahn and others, the easiest way of macroscopically demonstrating its permeability is by placing the teeth in silver solutions. Under these conditions the foramina should be superficially sealed and the internal pressure relieved by carefully cementing glass capillary tubes into the coronal ends of the canal. The openings of such capillary tubes are to be kept above the silver solution during the experimental diffusion period. If, however, the root canal is thoroughly sealed throughout the apical third so that the internal pressure equals the external pressure, diffusion is notably retarded, becoming almost negligible even under mechanical pressure, and, judged by our clinical experiences, the diffusion rate may be diminished to a point where the enveloping tissues are not seriously affected.

The partial and inadequate filling of root canals has been tried on a large scale and has proved a miserable failure. Such failures have been due largely to the fact that the root ends under such conditions soon become toxic and probably frequently pave the way to subsequent infection by traumatizing and lowering the resistance of the enveloping vital tissues, so that in successful root-canal surgery both the foramina and the permeable cementum must be kept in mind.

Root-Filling Materials

Any root-canal filling material that is non-toxic, that is insoluble,

* Novy and DeKruif, *Anaphylatoxin and Anaphylaxis, The Journal of Infectious Diseases*, May and June, 1917, pages 499 and 854.

that will permanently seal the root canal from the adjacent vital periapical tissue should be successful in a large majority of cases. If, however, in our zeal to destroy that formidable streptococcus we flood and traumatize the vital periapical tissues with powerful germicides, our satisfactory results will be much lower than they would be with the more rational measures. The operator must cease to deluge the formidable streptococcus at the expense of the vital tissues. Then, too, overinstrumentation and the forcing of root-canal contents into the vital tissues during the operation also pave the way for subsequent infection. If during vital-pulp extirpation the operator removes the tissue to the dento-cementum junction and seals the canal to that point, the failures will be reduced to a negligible number.

If such surgical procedures are impossible, the operation is contraindicated. Our records show a larger percentage of infected roots where there is a history of previous root-canal surgery than is evident in teeth that have had dead pulps for long periods without treatment and root filling. This is indeed most damaging evidence against the past practices of root-canal surgery. The majority of the single-rooted teeth are far easier to manage successfully by root filling than dentists generally believe. It is true that the mesial roots of molars and the two-rooted first bicuspids are usually much more difficult to manage, but when we stop to think about it, after eliminating the four third molars, there are twenty-eight teeth left, so that eighteen or twenty of the remaining teeth should be operable.

My experimental work from the clinical standpoint was carried out on single-rooted teeth only. The results of this work, covering about eight years, have been so much beyond our earlier expectations that we are at the present time trying to extend the operation to multirooted teeth. What the outcome will be remains to be determined by future observations. For the present we frankly admit the greater difficulties to be overcome by the mesial roots of molars. I am thoroughly convinced that with the encouragement of the profession, with the broader perspective and the newer understanding of essential fundamentals, the difficulties will be overcome and the question will cease to be a problem.

Developments In Indirect Inlay Technic

By Louis I. Abelson, D.D.S., New York, N. Y.

Although this paper is apparently an attempt to cover the entire subject of indirect inlay technic up to the time of the completion of the restoration, its object is to emphasize certain factors which are continually under discussion and to elaborate certain processes and technics incident to casting. I am fully aware of the variations of thought on the many phases embraced by this subject, and it is of the investigators along this line of work that I beg indulgence.

For many years, in fact for centuries back, gold was used to repair lost or dissolved tooth substance and thereby satisfy the peculiar trend of vanity evolved by our human existence. Of the many materials utilized and perfected in the past none has stood the test, from a standpoint of permanence, as well as gold foil. Although this medium presents many disadvantages and difficulties in manipulation, I dare say that it is particularly gratifying to note that the art, which for a time showed evidences of passing into oblivion, is being revived, as may be noticed in recent literature and endeavor.

There is no question—try as we may to disprove it—that gold foil properly inserted forms the most protective type of filling. Unfortunately, many obstacles present when we attempt the building of large or extensive restorations in posterior teeth, so many that a question arises as to whether any special advantage is gained by the protective feature of gold foil in contrast to the many valuable points obtainable in the cast inlay.

To begin with, it seems that our periodontal confrères have been somewhat at our heels in bringing to our attention certain conditions prevalent in the mouths of our patients. They inform us emphatically that occlusal contour in its entirety (marginal ridges especially) is of paramount importance. Next we are admonished on the functional relationship of the buccal, lingual, mesial and distal surfaces to the general dental economy, shown in true didactic fashion how inflammations, hypertrophies, atrophies, recessions and the many other ailments so common to periodontal tissues take place, and warned of the importance of the proper positioning of bulges and concavities on these surfaces.

A word about approximal surface contours, with which all of us should be very familiar, may not go amiss at this time. It is rather amusing to note in the many approximal inlays examined that one very important factor necessary for the maintenance of health in the interdental spaces is overlooked. It seems that in most cases we overlook the fact that although the occlusal half or two-thirds of the approxi-

mal surface is convex bucco-lingually and occluso-gingivally, the cervical portion tends to the reverse, blending into the grooved surface of the root, which is so artistically and harmoniously joined by nature to the coronal portion of the dental member. It is this flattened and grooved portion that permits the normal position of the septum and overlying periodontal tissues, maintaining normal tone and tension and eliminating the crowded or pinched environment induced by overconvexing the mesial and distal surfaces. (Fig. 1.)

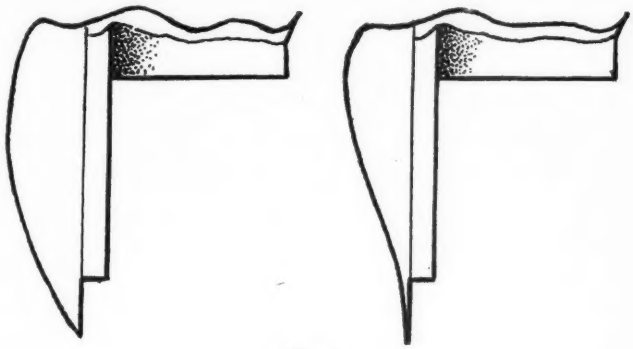


Fig. 1
Comparative approximal contours.

The Casting Process

From time immemorial we see evidences of the casting and pouring of metals with a degree of skill and perfection that at times taxes our conception of the possibility of their execution with the means at hand at that stage of human existence. In the present age, with multiple facilities at our command, with the ever increasing and developing fields of electricity, engineering and metallurgy, somehow or other we still fall short of perfection.

Of the many ways in which metals are poured or cast, the artisans prefer the sand mould; the jeweller, for the coarse and heavier types, still resorts to pressed cuttlefish moulds bound together into one piece, while the dentist in inlay work is forced into the use of moulds made from materials which solidify into a hard mass and have the advantage of rigidity but the disadvantage of dimensional change. This bugaboo forms one of the worries and annoyances that inlay casting presents.

The mould materials are varied and numerous, basically consisting of two powders, plaster and silica. One type may contain graphite and another some other inert material or mineral, but the fact remains that

the influencing constituent is plaster. On the quantity percentage of this product depend the rapid or slow setting of the investment, a high or low heat mould, a greater or less porous material and, last but by no means least, the possibility of error and the distortion of moulds by a confounding of technics. Suffice it to say that although many technics have been introduced, it is imperative that the instructions for proportioning and mixing the corresponding investments be strictly adhered to or we may come to grief. It is a proved fact that for a given working temperature a certain proportion of water is needed, a greater or diminished quantity resulting in weaker moulds, greater linear changes, and distorted and imperfect castings.

Advantages of the Indirect Method

While on the subject of the possible distortions of moulds, we are again reminded of the many volumes and pages written on the relative merits of the direct and indirect methods of obtaining the wax pattern. While it may be true that direct-method operators obtain excellent results, still we must weigh the possible chances for error by open-minded and fair reasoning.

For the present, let us exclude the simple four-walled cavity from the discussion and include only compound and complex cavities, since the simple types present no special problems and a reasonably careful procedure produces a satisfactory result.

In compound cavities, however, it seems that one might feel dubious as to the possibility of obtaining a fixed relationship between the occlusal dove-tail and the approximal portion, especially so because of present-day tendencies toward the conservation of tooth structure and the elimination of wide dove-tails. Can we truthfully say, in all fairness, that, working with a material mouldable at mouth temperature and having a large mass as one part, a much smaller portion as the retentive anchorage and a connecting neck which rarely, as in bicuspids, exceeds 2 millimeters in width by 1½ to 2 millimeters in depth, we can possibly maintain the exact fixed relationship of the three parts from the time we force the wax into the cavity, go through the necessary warming and carving for the reduction of occlusal excess and approximal bulk and produce general contour and occlusal form, without in the slightest effecting a disturbance of this ever-important relationship? What error is possible at all in the indirect method, by an operator of like skill, to compare in any way with an error or a discrepancy so easily produced during this pattern-making, even if the margins of the wax pattern have been re-adapted and the remainder of the pattern lack proper coaptation? The facility with which such faults are produced is readily apparent to indirect workers or to any

operator who has had the opportunity of observing errors such as distortion, displacement, insufficient covering of margins, lack of contact, etc., on models or dies. Only too often are indirect workers obliged to discard patterns made on dies, under most favorable conditions, and start anew, because they are able to discover discrepancies frequently overlooked inadvertently in direct carvings by the optical illusion of perfection under the cloak of high lights, saliva, improper illumination of pattern, and especially invisibility of the cervical border.

In complex cavities similar obstacles arise, together with the problem of shrinkage of a large mass of metal without the aid of a die to swage to, and also an increased difficulty in obtaining occlusal form to the nicety made possible by the use of occlusion casts.

One fact remains in favor of the indirect system of patternmaking —that until the time comes when we shall have produced a pattern material that softens at slightly above tooth temperature, remains rigid after hardening, as is the case with a mix of plaster, and permits carving without chipping or distortion, we shall be obliged to resort to the use of dies for the production of wax patterns with the least possible error.

Amalgam as Used in Dies

Through decades of service amalgam has pleased the most critical operators, even though its proper manufacture was not understood and its properties and characteristics were abused. With such alloys as we have today, and with the methods of manipulation as laid down by men experimenting with and proving their merits, we have little to fear from inaccuracy resulting from poor dies. The packing of dies is so simple a process that we may entrust the task to our assistants or, for that matter, to any non-technical individual, provided we have had ample opportunity to demonstrate the simplicity of the process.

Amalgam-workers shout from the housetops how apparently easy it is to obtain good amalgam fillings that retain their proper bulk over long periods of time and with little if any marginal distortion, even after months. How much simpler it is to produce better and stronger dies where we have infinitely greater control over the packing and condensing and expulsion of excess mercury, which, after all, is the potential error in amalgam. I am assuming that we are using amalgams properly proportioned and thoroughly mixed.

Any possible bulk change in amalgam dies would take place after long periods, in fact longer than for amalgam fillings and many times longer than is necessary for the carving of a pattern, moulding, casting, swaging and finishing.

Cavity Preparation

For all practical purposes we have three types of cavity, as follows:

(1) Simple—a four-walled cavity presenting involvement of one surface.
   (a) On occlusal surfaces.
   (b) On labial and buccal surfaces.
   (c) On lingual surfaces.
(2) Compound—a cavity involving two or more surfaces.
(3) Complex—a cavity involving a multiplicity of surfaces.

In the preparation of any of the many types of cavity, avoid the use of burs except for the fine definition of corners and angles. Generally speaking, we begin by the removal of overhanging and undermined walls with chisels—sharp ones for efficiency—and, by the way, Dr. Black's set of chisels, excavators and trimmers is invaluable for this type of work. In extending cavities, continue with safe-sided separating discs and suitable knife-edged wheels and tapering stones run wet. The pain patients experience is mostly from the overheating of tooth substance and can readily be avoided by the use of clean, true-running stones run under moisture. After the general shaping is completed, define the line angles and corners with tapering fissure burs and bevel the margins of the occlusal surface.

Simple Cavities

Simple cavities, when presenting in visible areas such as the labial surfaces of the upper incisors, cuspids and first bicuspids, are best taken care of by the insertion of porcelain inlays. Posterior teeth affected on the labial or lingual surfaces are best restored by cast inlay restorations, if the area involved reaches the gingival tissues and precludes the possibility of the use of a rubber dam for the insertion of gold foil.

For the simple occlusal cavity no material is better suited than gold foil. Except in the case of patients of extremely nervous temperament, there is absolutely no necessity to go through the operation of cavity preparation to obtain parallel walls, impression-taking or even direct pattern-making and casting, and have another sitting for the insertion of the restoration, when the entire operation can be completed with foil in but a few minutes more than the time consumed in extending the cavity, paralleling and taking the impression for an inlay. As a matter of fact, less cutting is needed for foil; undercuts do not necessarily have to be eliminated (I do not mean that we are to retain unsupported enamel); and the patient is thankful that he has not been subjected to extensive cutting. Dr. Prime has introduced a special set of gold foil pluggers and a leather-tipped hand mallet that greatly ease the

blows of condensation and make an otherwise unpleasant procedure bearable and more rapid (Fig. 2).

Impression Taking.—Where no special conditions prevail, soften the tip third of a modeling compound cone and force it into the cavity, maintaining the pressure until the assistant has adequately chilled the compound by a blast of compressed air or room-temperature water. However, when a cavity has extreme convexity and its margins are more or less convoluted, it is advisable to prepare a suitable tray bent and contoured to fit the irregularity of the prepared surface of the tooth, making ample allowance for safety against injury to the gingival tissues. Upon this tray build a small cone of modeling compound, assuring adhesion by warming the tray. Now chill the tray and the attached compound and, when ready for impression-taking, warm the

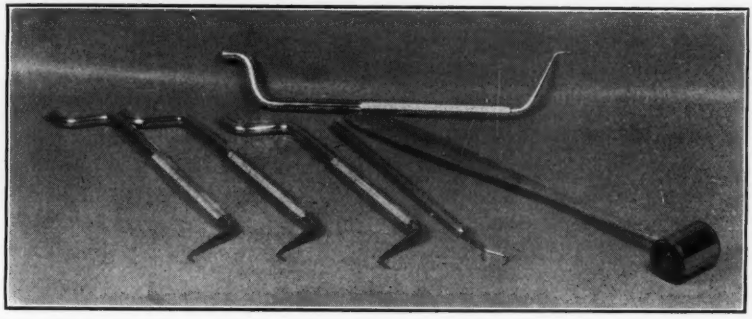


Fig. 2
Dr. Prime's pluggers and mallet.

tip of the cone to one-third its length and place it in position in the cavity, taking care to avoid impingement on the gingival tissues and cutting of their attachment by forcing the tray too far into the gingival crevice. In cases where the gingival structures overhang the cervical margin of the cavity, it is best to seal the cavity with a plug of base-plate gutta-percha, allowing a slight excess to deflect the gum. Do not overforce the soft tissue, since several days of this tension would be sufficient to rupture the delicate peridental attachment and produce an injury impossible of repair.

As a general rule it is best to dry all cavities and line them with a suitable varnish to occlude the dentinal tubuli and afford increased adhesion for the gutta-percha. The drying of cavities in vital teeth quite often presents an embarrassing situation, (1) because the patient resents the procedures in vogue, for reasons obvious to all, and, (2) because of the impossibility of cementing any object to a moist surface,

which not only prevents adhesion but dilutes and disintegrates the cementing medium.

The following procedure will be found quite efficient for drying and lining all classes of cavity:

(1) Isolate the tooth with the rubber dam or cotton rolls.
(2) Wash the cavity thoroughly with warm water on cotton sponges.
(3) Wipe with cotton.
(4) Apply warm chloroform to remove the moisture.
(5) Line the cavity with a suitable cavity varnish.

For cavities that do not present marked sensitiveness, after washing the cavity, set the compressed air at 30 pounds and by a quick application dry the cavity, thus avoiding the irritation of rubbing and wiping, and with no ill effects to the patient. In fact, as a rule, the patient thinks the snap-shot application of the blast is quite amusing, the length of the application being instantaneous and never prolonged.

Line the cavity by wiping with a chloroform cavity lining.

This procedure should be followed prior to the cementation of the casting.

Under all circumstances avoid the use of alcohol, because its comparatively slow evaporation produces a pulpal irritation equivalent to the shock of cold water. Chloroform is much safer, and even this should be used sparingly.

310 West 72nd Street.

(To be continued)

PERCY HOWE'S LETTERS
In Collaboration with "Brother Bill"

Fourth Letter

Dr. Howe receives a letter from a dentist who objects because his experiments are not made on children, and in reply he explains that in Massachusetts it is illegal to chloroform children to find out what is going on in their teeth.

My dear Doctor:

You express a regret that the beliefs which I offer have been reached by experiments on animals other than human, and you ask just how much value you should attach to the results of such experiments. I am glad you asked this, because the answer may enable you to read all diet literature more understandingly and show why such experiments may be valuable to us as dentists.

Students of diet and disease use what are called *experimental animals*—rats, guinea-pigs, cats, dogs, monkeys, and perhaps others. They agree in regarding the results of their experiments as strongly suggestive, but, so far as I know, no one regards them as conclusive. Even so careful a worker as Sherman writes: "The albino rat of the present-day nutrition laboratory . . ., under proper conditions, can safely and wisely be used for nutrition experiments the findings of which are to be applied to human problems."*

Because you get a result in animals with fair uniformity, it does not necessarily follow that you will inevitably and uniformly get identical results in humans from the same procedure. Every little while something occurs to show me anew that the animal is not a mere test-tube. He is apt to take a part in the processes going on in his body, and he may sometimes take that part by means of a mechanism or a product about which we know little or nothing.

However, some of the principles of physiology and pathology appear to be identical in these animals and in humans, and if a certain procedure brings similar results in a sufficient number of animals over a sufficient length of time, you will generally find not only that it is suggestive for humans but that by sufficiently intensive inspection you can detect very similar causes at work among humans, with results so nearly identical that you will have difficulty in restraining yourself from the conviction that those causes are producing those results. Observe that I said "a sufficient number of animals over a sufficient length of time." Careful students do not form conclusions from results

* *Chemistry of Food and Nutrition*, 1926, page 3.

in a few animals for a short time. Sherman speaks of raising sixteen generations of rats on a standard diet and then improving them in seven important particulars by increasing the amount of milk in the diet.*

You ask, "Why not experiment on children?" There are two answers to your question, and I shall try to apply one of them directly to our own profession and the other somewhat less directly. As I live in the capital of Yankeedom, I shall follow the typical Yankee form of answering your question by asking you one.

Why do you take a postgraduate course? Is it not to learn as quickly and completely as possible some technic that might require years of effort if you were not aided? Can you not take home the results of your instruction, observe all your patients more intelligently in the light of your quickly acquired knowledge and select those who are suffering from causes not previously well identified in your mind, and who might profit by forms of service that you were not formerly qualified to render? That is exactly what the experiments on animals enable the laboratory worker to do, and that is just what the findings of the better trained and more conservative workers will enable you to do as you learn about them. And just as you recognize that good dentistry is always in a state of flux, moving from what was good yesterday to what is good today and looking for something better tomorrow, so you must recognize that our knowledge of diet and disease is still in the course of development, and you must not be too impatient if the results here are not more conclusive than they are in your operative or prosthetic technic.

It would be ideal if we could experiment on children, and when men like yourself have so far formed public opinion in favor of such work that there is an irresistible demand for it, it will be done, to the enormous profit of the race. Mrs. Mellanby and Dr. Pattison, in England, have just concluded a very interesting experiment on 71 children in a bone-tuberculosis hospital, for a period of 28 weeks, which may help to establish the fact that cereals, especially oatmeal, exert an anti-calcifying influence.† Important experiments on children are becoming more frequent, but they must always be on the up-building side. It is, of course, impossible to carry out the destructive experiments on children or to check results as one can with animals. Also, one cannot post-mortem a group of children, serially, to find out what effect a diet-deficiency has on dental pulps.

If you train your powers of observation, you will be able to find in nearly every community children whose environment presents at least some of the important elements of the environment in the experimental

* *Chemistry of Food and Nutrition*, 1926, page 563.
† *British Dental Journal*, Oct. 1, 1926.

laboratory. And you may be able to find among your own patients, or among people whom you can make patients for this purpose, children or adults on whom you can conduct experiments which cannot possibly prove harmful and may prove very beneficial to them, to you and to the community.

Let me tell you just a little about a few fundamental conditions in an experimental laboratory, because this subject of biological demonstration will be coming more and more into the literature of the future and you will need to be more and more on your guard as to the origin and the worth of the suggestions you accept.

In our laboratory we use mostly rats, guinea-pigs and monkeys. The rats and the pigs give results about thirty times as quickly as could be obtained in humans from birth to physical maturity. They are inexpensive, may be raised and kept in great numbers and require but little space and small quantities of food.

Monkeys are different in some respects. They require more time to show results, need more space and food, are more difficult to handle in many ways and are much more expensive. All our monkeys come from the foothills of the Himalayas, since the effort to raise this species (Macacus Rhesus) in this country has not been successful. They are more or less intractable, and if you, a stranger, were to approach their cages, they would fly at you and, if you stood too near, would try to pull the buttons off your coat or to bite it. In spite of all these disadvantages and others we use them extensively, because the anatomy and physiology of the monkey are closely like that of the human and their dentition is almost identical with ours in all respects that are important for our study.

The laboratory worker must find a diet on which large numbers of animals may be kept in the optimum of health. They must maintain weight, condition and vigor and be able to produce a second generation of vigorous young. He will probably call a diet which will achieve these ends a *basic diet.* He will keep a sufficient number of animals on this diet as *controls.* He will then separate groups of animals and establish for each group a known deficiency or excess in diet, will record hourly or daily every essential fact about each animal, and may post-mortem animals at different stages of the experiment. If he is wise, he will carefully record his findings and may publish them, but he will be slow to form conclusions.

You may be quite happy, as you read the results of experiments on animals, that you are not compelled to study them in as great detail as our brothers in the medical profession. There are many experiments of great importance to them which are of no importance to you. For instance, it is by no means easy to diagnose the difference between

some cases of scurvy and some cases of rickets. Perhaps the conditions often intermingle in our animals. You are not called upon to diagnose these conditions in children. Your interest should begin long before either condition supervenes, and when either condition is present, the case should have long since been out of your hands.

What, then, is your interest in the results of experiments on animals? As I see it, your interest lies in learning first, what will increase the resistance of your patients to oral and dental disease and maintain the vitality of the tissues at a high level throughout life, and, secondly, about whatever lowers the vitality of the tissues and thereby increases their susceptibility.

What are the causes against which you desire to increase the resistance of your patients? I don't know—perhaps no one knows. But we all know that something causes retarded facial and oral development with crowded deciduous and adult arches and a host of trouble following; that something causes susceptibility to decay, so that in many cases our best efforts at cleaning and filling are insufficient as protection; and that something causes debility of the periodontal tissues with recession and resorption and their sequelae.

May not our failures in the past be partly because we have thought of the pathology of the teeth as different from that of the other organs of the body? Our medical brethren have greatly changed their conception of the pathology of bone during the last few years and we may need to change our notions about oral pathology. At least we do not seem to have demonstrated our special pathology well enough to have it universally accepted.

How can we protect patients against causes which we do not understand? If the laws of oral protection fall entirely outside the laws of physiology and pathology as they are established everywhere else in the body, our chances of success are slight until we learn a new pathology. But if it can be shown that the pathology of the mouth, including the teeth, is identical in principle with the pathology of the rest of the body, we may be more hopeful.

Now, what happens first in pathology? Is it not that some hostile cause attacks the body, that the body offers such resistance as it can, and that the success of the attack is decided by the relative strengths of the attack and the resistance? In caries the cause may be local (we are not concerned with its mechanism at this moment). If the enamel is perfect and of high resistance, caries will progress very slowly, if at all. And such a tooth, kept relatively clean, may never decay.

If there are pits and fissures in the enamel to act as gateways, the acids and bacteria will find easy access to the dentin and will destroy it at a rate that may be determined by the resistance they encounter.

Of course, the question will immediately come into your mind as

to what makes resistance. Probably nobody knows all about what it is, but I believe it to be the inherent vitality of the life spark working with whatever materials it can get its hands on.

The most astonishing thing about this vital spark is its vitality. It seems always to be strong enough to build a good organism, if given a chance. It may be beaten down again and again and hindered past expression, but as soon as the hindrances are removed, it starts right in to make the healthiest and strongest body it can. And nearly always it will do a pretty good job if it is helped even a little. If the conditions are just right, it builds an organism with a physiological threshold so high that microorganisms are about as effective as water on a duck's back.

There are four descriptive terms commonly applied to the condition marked by a high degree of susceptibility to physical ills. Perhaps none of these terms is perfect, but you should know them all. They are (1) *decreased vital resistance,* (2) *increased susceptibility,* (3) *functional or nutritional unbalance,* (4) *a lowered physiological threshold.* I like the last term best because I can picture to myself all the ills that flesh is heir to waiting outside the door, unable to get in while the threshold is high but slipping in singly or in groups as the threshold is lowered.

What would lower the threshold in such an organism? There may be many agents, acting singly or together, such as cold, fatigue, hunger, diet-deficiencies or excesses, toxins, etc. Observe that none of these is bacterial. You have to lower the physiological threshold of the perfect organism with something besides bacteria before bacteria can get started.

I wanted to show you something in this letter which I think is very important, but it is already too long, so I shall close with a little more preparation for the next letter. I am going to recite a few things you have seen again and again in practice.

In some mouths which receive slight dental attention there are broad arches, sound teeth and healthy tissues. One of my first patients was a German who traveled about the country selling clocks. One day he came into the office and, sitting down in the dental chair, he said, "See if my teeth need fixing." I examined his mouth carefully. The only thing I could find to do was to remove a line of thin, dark stain on the crowns of the teeth just occlusal to the gum line. The arch was fine and broad, every tooth was in position, and there was not a cavity. He told me that he was sixty-eight years of age, and that it was the first time he had ever sat in a dental chair.

I thought about this old German a good deal. As I got better acquainted in town and began to repair the extensive ravages that decay was making in the teeth of others who lived in similar conditions, I came to the conclusion that he had some sort of physiological balance

throughout his whole system, and that it insured a balance of the saliva which either protected the teeth or did not attack them.

Among my friends in the dental profession are three prominent periodontists who are busy every working minute keeping somebody's teeth clean and healthy. One man's mouth stays clean if he brushes it once a week. The second needs to brush his twice a week. The third can hardly keep his mouth clean by frequent daily care. Do not these conditions exhibit different levels of the physiological threshold?

Thousands of the children who come here to Forsyth are very susceptible to caries. A large percentage of them have other evidences of a lowered physiological threshold, such as spinal curvature or ear or throat trouble.

I believe that great susceptibility to dental caries and debility of the soft tissues of the mouth may be merely the oral expression of a lowered physiological threshold, and that just in proportion as the things that crowd the threshold down are removed, the innate vitality of the life spark will raise the threshold to such a height that by ordinary operative and prophylactic measures we shall secure for many of our patients throughout life full complements of sound teeth in healthy tissues.

Yours respectfully,

Percy R. Howe

Platinum Pointers

By J. O. Whiteley, B.S., York, Pa.

An article on the treatment of platinum-pin teeth might be headed *Platinum Is Not Indestructible,* or *Dangers in Using Platinum-Pin Teeth.* That class of artificial teeth known as *platinum-pin teeth* is being less and less used in vulcanite dentures, but is still extensively used in plate-work for soldering and for casting.

As a matter of fact, *platinum-pin teeth* is rather a misnomer carried over from former years. This class of teeth might better be called *platinum-alloy-pin teeth,* for most teeth of this class are made with pins composed of platinum, palladium and gold, or simply palladium and gold. However, for continuous gum work and similar work which requires the subjection of the materials to repeated heating, a special pin composed of only platinum and iridium should be used.

As you will see, the point I shall try to make is that platinum pins never break in the cold. Failure of the pins always follows the application of heat, and if more moderate heat is used, failures will be fewer. However, we must expect all platinum-pin teeth to be subjected to some heat.

The high cost of platinum and its restriction by the Government during the War led to experiments to find a suitable substitute for tooth pins. The platinum alloys now in use are the result, and they furnish very satisfactory tooth pins, which, in addition to a considerable saving in cost, perform all the duties that tooth pins are required to perform.

However, some dental workers believe that in using platinum-pin teeth they are using teeth whose pins are immune to any harsh treatment, particularly in the use of heat. This is a fallacy.

Pure platinum, alloys of platinum and iridium, or platinum, palladium and gold, or simply palladium and gold, all have their critical temperatures beyond which it is unsafe to go, just the same as every other metal or combination of metals has its critical temperature.

Copper, if heated above 800° C., becomes hot short, and copper alloys exhibit this same crumbling tendency when overheated.

Nickel, when subjected to certain high temperatures, becomes rotten and in a heated state is very susceptible to contamination in the presence of sulphur and carbon, which render it unfit for subsequent working.

Every one familiar with the practice of heat-treating steels knows what an important effect on the crystallization of steels is exercised by the degree of heat employed. Overheating tool steel considerably above its decalescent temperature puts the crystals into such an arrange-

ment that the steel cannot again be successfully hardened, and so on through the whole list of metals. According to the *Encyclopaedia Britannica*, zinc, when heated to 205° C., becomes so brittle that it can be powdered in a mortar.

Because platinum is very expensive and is a noble metal, many people have the mistaken impression that it is indestructible and foolproof. The major danger in platinum-pin teeth lies in the use of too much heat. Casting against platinum-pin teeth is a practice which has brought grief to some operators. This operation may be successfully carried on if the investment containing the teeth be slowly and gradually heated to a light red heat (1300° to 1400° F.). The casting gold should be brought to a quiet fusion. It is a mistake to have the casting gold boiling hot, as this will cause a pitted casting, will tend to snap off the pins as the gold contracts sharply, and in general tends to give bad rather than good results.

When a platinum pin breaks off flush at the back of the tooth and the pin fracture shows a decided crystalline formation, it is safe to say that excess heat has been used in that particular operation.

When the pins in a single tooth give trouble, it may possibly be the fault of the metal, but when repeated failures occur in the same laboratory with the same methods, the trial of a different technic is certainly indicated.

One of the country's leading platinum handlers has the following to say on the care of platinum:

> "It is important to remember that, although platinum is not oxidized in the air at any temperature nor attacked by any single acid, yet there are many substances that attack and combine with it at comparatively low temperatures.
>
> "The caustic alkalies, the alkaline earths, nitrates and cyanides, and especially the hydroxides of barium and lithium attack platinum at a red heat, although the alkaline carbonates have no effect at the highest temperatures.
>
> "Phosphorus and arsenic attack platinum when heated with it; therefore phosphates, arsenates, etc., should not be ignited in their filter paper in the crucible.
>
> "Silicon, which may be formed by the reducing action of carbon on silica, causes brittleness.
>
> "Contact with compounds of easily reducible metals like lead is dangerous at high temperatures, because low-fusing platinum alloys are readily formed.
>
> "Do not put platinum in the inner cone of the Bunsen flame; the carbon in this cone reacts with the platinum to form a carbide which causes brittleness and general deterioration."

With all these cautions to observe, it is not strange that dentists

and dental mechanics occasionally come to grief. Remember, then, that platinum and its alloys are subject to deterioration from excess temperatures (just as are all other metals) and to deterioration from the fusion of many base-metal combinations in contact with the platinum.

The next time you have trouble with platinum-pin facings, try the work over again with more moderate heat. You will get better work and fewer failures.

Special Teeth for Cross-Bite Cases

By Alfred Gysi, D.D.S., Zurich, Switzerland
Professor of Prosthetic Dentistry, University of Zurich
(Literary Collaboration by George Wood Clapp, D.D.S.)

SECOND ARTICLE (Continued)

EXPERIENCES WITH CROSS-BITE SET-UPS (Continued)

Disadvantages in the Transposed Arrangement

There were some disadvantages in this transposed arrangement of normal-bite teeth. The very accuracy of form of these teeth made it impossible for patients for whom teeth had been arranged as has just been described to make protrusive movements or movements which combined the protrusive element with the lateral element and still maintain the denture balance desirable for efficiency. With this arrangement a proper balance of the dentures in incising required that the anteriors be set in end-to-end bite, because, if the maxillary anteriors were set with any considerable degree of overbite, only the incisors and the bicuspids came into contact during incising, whereas the molars had no contact and the dentures were easily tilted out of place.

How to Secure Balance During Protrusion

This disadvantage could be overcome by setting the maxillary first bicuspids, which had been omitted when the teeth were placed on the mandible, behind the mandibular second molars, with the lingual cusps pointed directly forward and the buccal cusps pointed directly backward. The surface of the tooth thus placed was ground to be parallel with the protrusion facet of the maxillary second molar, so that when the mandible moved forward the facet on the molar articulated with the facet which had been ground on the bicuspid and maintained balance for the dentures.

The balance established by the addition of these bicuspids behind the mandibular second molars was merely three-point contact; that is, the dentures, when in protrusive occlusion, were in contact at the incisors and at the bicuspids which had been placed behind the mandibular second molars. The molars which had been placed upon the maxillary ridge were out of contact with the opposing teeth during the return of the mandible from the incising bite. Increased stability of the dentures was thus secured at the expense of much labor by the dentist and the loss of part of the masticating efficiency. This procedure was so troublesome that few dentists took the pains to place and grind these bicuspids.

A further disadvantage of this cross-bite arrangement of normal-bite

teeth was that it was necessary to set the bicuspids and molars with the tips of all the buccal and lingual cusps in the same horizontal plane, as diagrammed in Fig. 5 and more fully shown in Fig. 6. This forced the necks of the mandibular teeth far inward toward the median line, as in Fig. 6, and crowded the tongue so that the dentures were likely to be displaced. It also required the setting of the incisors in an end-to-end bite, or nearly so, which is undesirable in many cases.

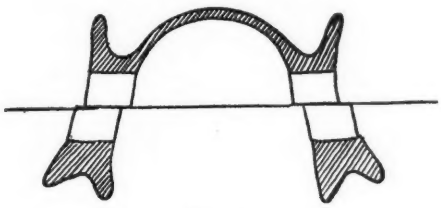


Fig. 5.

The most advantageous cross-bite arrangement of normal-bite molars requires that the buccal and lingual cusps be set in the same horizontal plane, as diagrammatically shown in Fig. 5.

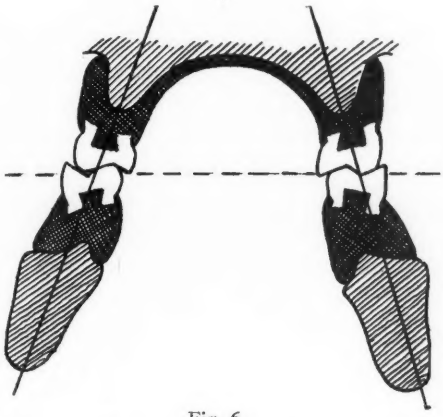


Fig. 6.

Too narrow tongue space produced by cross-bite teeth made with anatomical molars.

Progressive Cross-Bite-ism

The normal relation of the dental arches with all the teeth present in good position is shown in Fig. 7A.

The beginning of cross-bite-ism is shown in Fig. 7B by the crossing of the lines in the second molar region.

As resorption progresses, the crests of the alveolar arches will cross in the region of the first molars, as shown in Fig. 7C.

In Fig. 7D, the relation of the arches is shown when resorption has progressed far enough to require that the maxillary second bicuspid be set lingually to the mandibular bicuspid.

In Fig. 7E, the maxillary first bicuspid needs to be set lingually to the mandibular first bicuspid.

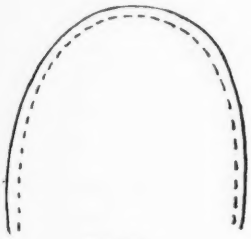


Fig. 7A

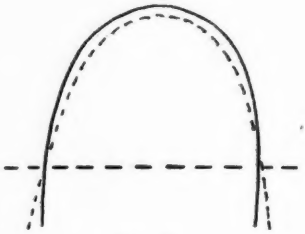


Fig. 7B

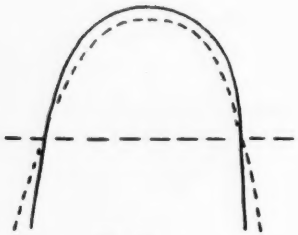


Fig. 7C

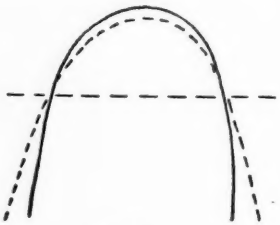


Fig. 7D

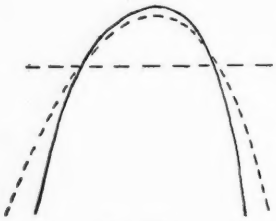


Fig. 7E

Figs. 7A-7E

The unbroken line represents the width of the maxillary arch of the natural teeth as compared to the width of the mandibular arch of the natural teeth, which is shown by the broken line.

Fig. 7A. In what may be called the *first stage of resorption*—immediately after the loss of the natural teeth—anatomical occlusion can be secured all around with normal-bite teeth, because the maxillary dental arch can be made wider than the mandibular dental arch.

Fig. 7B. In the *second stage of resorption*, the mandibular alveolar arch is wider than the maxillary alveolar arch in the region of the second molar.

Fig. 7C. In the *third stage of resorption*, the mandibular alveolar arch is wider than the maxillary alveolar arch as far forward as the first molar. The crossing region is at the first molar.

Fig. 7D. In the *fourth stage of resorption*, the mandibular alveolar arch is wider than the maxillary alveolar arch as far forward as the second bicuspid. The crossing region is at the second bicuspid.

Fig. 7E. In the *fifth stage of resorption*, the mandibular alveolar arch is wider than the maxillary alveolar arch as far forward as the first bicuspid. The crossing region is at the first bicuspid.

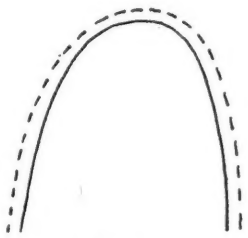


Fig. 8.

In prognathous cases the normal relation of the arches is reversed by the fact that the maxillary dental arch is smaller all around than the mandibular dental arch. The broken line, which represents the mandibular arch, is here shown entirely outside the solid line, which represents the maxillary arch.

Abnormal Cases

Dentists are sometimes called upon to supply dentures for cases which were prognathous when all the teeth were present. Under these conditions the relations of the ridges may be somewhat as shown in Fig. 8, and resorption will, of course, aggravate the condition.

In the old days, when artificial teeth were non-anatomically formed, the efforts to treat this condition by setting the teeth in cross-bite relation were disastrous to patients. For a time after such dentures were inserted the patients were comfortable, but after two or three years the mandible began to move forward and increased the prognathism. Even if the dentures were taken away, a mandible which had moved forward in this way would not go back to its former position. Such cases can be much more successfully treated now because of the interdigitation of the cusps of the teeth which I designed in 1913, which prevents the mandible from moving forward. The teeth can be set in such way that when the patient applies the force necessary in mastication, the mandible will be forced somewhat backward. This is equally

true of the forms of cross-bite teeth, which I have designed in accord with the laws governing normal-bite teeth.

There are cases in which the cross-bite relation is advantageous on one side of the mouth and the normal-bite relation on the other side.

The Importance of Providing Tongue Space

Because many failures to make satisfactory full dentures have always been due to the lack of understanding of the functions of the tongue and its need for sufficient space in which to function, and because dentists will never make successful dentures until they provide space for the tongue, it is worth while to call attention here to the need for such provision and later to show how it can be made.

For many years after I went to the University of Zurich I did not recognize the importance of the tongue in denture work and I was unable to understand why dentures properly made from an engineering standpoint and over good models should not function satisfactorily. Later the cause of many failures was discovered to be that no provision had been made for the size, form and function of the tongue.

During mastication the tongue moves from side to side, forcing food between the teeth. It will persist in efforts to discharge this function, even if the space inside the arch of one or both dentures is insufficient. As the tongue is a large and strong muscle which cannot permanently be successfully resisted by any suction that can be given to artificial dentures, the dentures will be continuously displaced until the fault is corrected by giving it sufficient room for its work. Such displacement is made all the more certain if the lingual sides of the mandibular denture incline strongly inward, or if there are any projections on which the tongue can "catch." As the plaster casts over which dentures are made give no indication of the size, form, position and function of the tongue, dentists generally disregard it. Many a denture otherwise perfect is a complete failure because the tongue insists upon doing its duty without regard to the artificial and bothersome limitations which the dentist has placed upon it.

Special attention should be given to the size and form of the tongue when patients have been without teeth for several years. In such cases the tongue widens until it fills the space within the mandibular alveolar arch and often extends somewhat into the upper part of the mouth. When artificial dentures are placed in such mouths, they unavoidably narrow the space and somewhat crowd the tongue. Under these conditions the tongue may repeatedly lift the mandibular denture during speech and cause the teeth to clatter. The only remedy is to provide teeth which reduce the tongue space as little as possible and to arrange them in as wide a mandibular arch as conditions permit.

A Summary of These Experiences

In summarizing the history of setting normal-bite teeth to the cross-bite relation, it may be said that it was gradually evolved to secure better stabilization of the dentures, and that it allowed patients to exercise more masticating force in certain cases without tilting the plates. The difficulty has been that heretofore there have not been teeth which were equally efficient in all three directions of movement essential to mastication or any possible arrangement that would entirely overcome these inadequacies. The *all-bicuspid* dentures were deficient during lateral movements, and the dentures with transposed normal teeth were deficient during protrusive movements. Where the cross-bite relation was established, patients were better off with it, in spite of the disadvantages which have been mentioned, than they would have been with dentures in which the teeth were set in the normal relation.

The cross-bite relation has not been generally popular with dentists and technicians because it requires much study, time and labor on their part, which they have not always been free to give. It has been merely an emergency measure for extreme resorption cases.

The use of teeth in which the protrusive, retrusive and working facets have been carved to permit a cross-bite relation with the teeth set in the proper line will not give dentists and technicians any more trouble than a normal-bite relation and will make possible for a large number of patients a degree of stability, comfort and efficiency in artificial dentures that is otherwise impossible.

(To be continued)

Oral Surgery In Practice

By James L. Zemsky, D.D.S., New York, N. Y.

Attending Surgeon, Department of Oral Surgery; Chief of Clinic and Director, Surgical Periodontia Department, Midtown Hospital, New York

(*Continued from March*)

ANESTHESIA

¶ 64. It should be borne in mind that there are two types of anesthetic, local and general. Each has its advantages, and to employ one to the exclusion of the other means not to take full advantage of anesthesia.

¶ 65. While the operator has the privilege of choosing the type of anesthesia he wishes, it is not altogether fair nor is it wise to *disregard* the patient entirely in this matter, for he deserves a certain consideration.

¶ 66. Local anesthesia is not meant to be employed *only* for patients to whom an administration of a general anesthetic is hazardous. On the other hand, to employ a general anesthetic in cases where a local would do just as well indicates that not the best judgment is being exercised.

Hygienic Inhaler

¶ 67. Administration of a general anesthetic by means of an inhaler that cannot be boiled is an antiquated procedure in these days of aseptic surgery. (See Figs. 102-104.)

Fig. 102

Photograph of a type of inhaler which permits boiling. The rubber part, which is applied to the patient's face, can easily be removed and boiled. (See ¶67.)

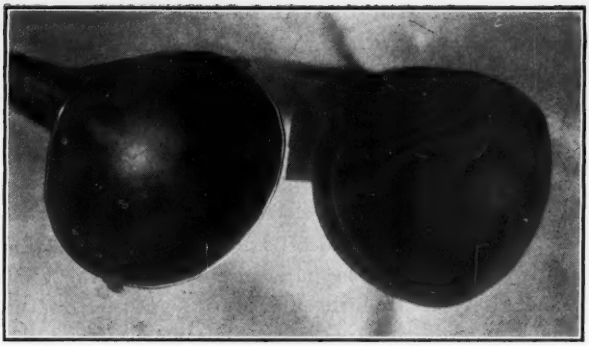


Fig. 103

Views of the rubber part of an inhaler. This may be put in the sterilizer and boiled with instruments, props, etc. (See ¶67.)

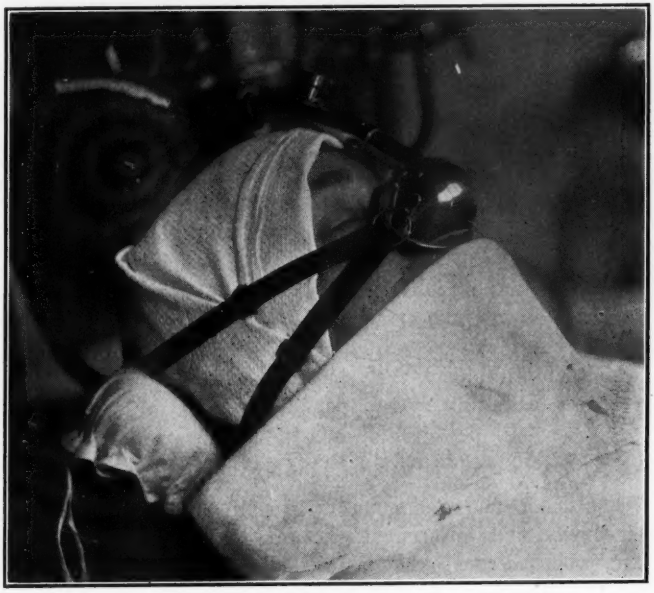


Fig. 104

Photograph showing an inhaler applied to the patient ready for administration of nitrous-oxide-oxygen anesthesia. It is held securely in position by elastic bands attached to a square piece of cloth placed over the occiput.

The mouth is kept open by a prop attached by a string to another prop hanging outside the mouth. The towel placed over the patient's open mouth prevents the inhalation of air.

When the operation is to be started, the towel is removed and a large cotton ball placed in the mouth. This prevents the inhalation of air during the operation, acts as a barrier to loose roots and extracted teeth, and prevents the swallowing of blood. (See ¶67.)

¶ 68. Regardless of the number of times a patient has been previously put under a general anesthetic with perfectly good results, every time such an anesthetic is administered the patient should be very carefully examined and closely observed during its administration so that when an emergency arises the operator may be fully prepared to meet it.

¶ 69. Apparatus for the administration of a general anesthetic may be excellently constructed, the mixture of the gases automatically adjusted, and safety controls ingenuously designed. However, to depend too much upon the *machine* is not advisable. To watch the *patient* instead of the machine is a great deal safer.

¶ 70. Much embarrassment may be avoided by having a lady assistant in the room when a general anesthetic is administered to a female patient.

¶ 71. In deciding upon the type of anesthesia the operator should bear in mind that patients who indulge excessively in the use of tobacco and alcohol are not good subjects for general anesthesia.

¶ 72. Securely strapping patients in the chair during nitrous oxide anesthesia often prevents unpleasant experiences.

¶ 73. Nitrous oxide, either alone or combined with air and oxygen, is the safest and probably the best of all general anesthetics that may be advantageously given for brief oral operations.

¶ 74. It should be borne in mind, in cases of death which occur during nitrous oxide anesthesia, that although the anesthetic was only indirectly related to it, nevertheless it was an important factor in producing it. Therefore very serious consideration of all possible conditions which contra-indicate the administration of nitrous oxide is imperative prior to submitting a patient to it.

Contra-indications for the Use of Nitrous Oxide Anesthesia

¶ 75. Edema and inflammatory swelling affecting the tonsils, tongue, larynx and adjacent tissues are extremely likely to cause asphyxia, when nitrous oxide is inhaled, and therefore are to be regarded as conditions contra-indicating its use.

¶ 76. Patients with goiter and enlarged glands may develop dangerous symptoms. Such patients should not be subjected to nitrous oxide anesthesia.

¶ 77. An undeniable danger exists in the case of persons who are alcoholic and have taken alcohol immediately before inhaling the anesthetic. Rupture of blood vessels or overfilling of the right ventricle, with consequent syncope, are the dangers.

¶ 78. Pregnant women are not prejudicially affected by nitrous

oxide, provided they are not within a very short period of their accouchement.

¶ 79. Lactation, in the majority of cases, is not injuriously affected by the use of nitrous oxide, nor is it contra-indicated for women during menstruation, although they are quite prone to be upset, hysterical, etc.

¶ 80. Sterilized swabs of gauze secured by long, looped strings should be placed in the back of the mouth. They will check the flow of blood down the trachea, thus preventing any interference with breathing. They will also prevent the swallowing of blood, causing nausea and vomiting, as well as act as a barrier to extracted roots and teeth, which sometimes are lost sight of and may slip into the air passages.

¶ 81. If the prop is thrown out and the teeth become clenched, great care must be taken to introduce the closed gag somewhere in the region of the molars or premolars, by preference at the spot where there is a gap.

¶ 82. To save much embarrassment to both patient and operator, it will be well to remember that the bladder and even the rectum may be involuntarily emptied under nitrous oxide, especially by nervous patients, and hence it is always wise to allow patients to pass urine before taking this anesthetic.

¶ 83. Gags, mouth-openers, props, tongue forceps, sponge-holders, sterilized gauze and a tracheotomy case should always be at hand before gas administration commences.

¶ 84. One of the methods to start respiration is to push the mandible forward from the angle of the jaw.

¶ 85. Bending the body down so that the face is placed between the patient's knees will expedite recovery in cases of minor degrees of faintness. The inhalation of a few whiffs of nitrate of amyl will often relieve the heart.

¶ 86. In prolonged operations advanced age and systemic disturbances, such as cardiac, vascular, and renal diseases, diabetes and other debilitating conditions, are contra-indications for general anesthesia.

Local Anesthesia

¶ 87. There are some patients who have a prejudice against novocain and cocain; some who are very nervous and scream or groan when touched. This type of patient is not a good subject for local anesthesia; neither are children.

¶ 88. When local anesthesia is used, the patient should be informed of what to expect. He should be told that the applications of iodine to the skin or mucous membrane will cause a slight burning sensation, that he will feel several needle pricks at the beginning of the injection,

and that thereafter a peculiar "dead" feeling will develop. He should be assured that while he will feel manipulation, there will be no pain.

¶ 89. During the operation under local anesthesia the patient is conscious and understands and hears everything that is spoken, therefore great care should be taken not to annoy him by unnecessary talking, careless remarks, rattling of instruments, throwing instruments noisily into the pans, the turning on of steam sterilizer or any other disturbing noise.

¶ 90. To persuade a patient to take a local anesthesia, he may be told that it will ease his burden by abolishing the surgical shock that may follow operations and by doing away with the disagreeable and even at times dangerous after-effect; also, that it enables the surgeon to work with perfect safety and ease because of the complete relaxation of the patient's muscles, as well as his assistance and cooperation, as, for instance, his ability to open the mouth, turn the head, etc.

Fig. 105

MANDIBULAR INJECTION

Photograph of a section of a wet specimen made one centimeter above the occlusal surface of the mandibular teeth. It shows the structures located at this plane: (1) ramus; (2) external oblique line; (3) internal oblique line; (4) lingual nerve; (5) mandibular nerve. (See ¶91.)

¶ 91. Having decided to use local anesthesia, the surgeon should familiarize himself with the necessary technic and acquaint himself with the special anatomy of the parts upon which he is to operate. (See Fig. 105.)

¶ 92. Only a heavy-gauge needle should be used for mandibular injections. Care must be taken that the syringe does not leak.

¶ 93. During the injection the patient's head should be well supported and in a comfortable position. The needle introduced into the tissues ought not to be completely submerged, but rather left with at least one-half a centimeter in view. (See Figs. 106-107.)

¶ 94. Skillful manipulation is possible when the syringe is handled with a perfectly free and relaxed wrist, while the other hand is free to palpate for the landmarks.

¶ 95. It must not be forgotten that the oral tissues are septic and must be disinfected. Tincture of iodine should be applied to the dried-out mucous membrane, after the landmarks have been ascertained, and only then should the needle be inserted. It is advisable to move it slightly back and forth while the solution is being deposited very slowly. (See Figs. 106-107.)

Fig. 106

MANDIBULAR INJECTION

Photograph showing the first position of the syringe with 1⅞-inch heavy needle ready to enter the tissues. It shows the relation of the needle to the ramus. The needle when advanced far enough will strike the bone between the external and the internal oblique lines, where a few drops of the anesthetic solution is deposited. (See ¶93 and ¶95.)

¶ 96. It is not safe to inject a solution that has become discolored. The temperature of a solution should be nearly that of the body.

¶ 97. It is not necessary to "pump" the tissues full of solution. Rather a small quantity should be used, for if a minimum quantity is properly injected, deep surgical anesthesia will ensue in time.

¶ 98. Unless the anesthesia is sufficiently definite, the operation should not be begun. It is better to wait, or reinject if necessary, than to inflict unnecessary pain upon the patient.

¶ 99. In case of failure to secure anesthesia by the conduction method the surgeon would do well to perfect his technic, which of necessity must have been faulty. The method of securing local anesthesia is an established fact and no longer an experiment.

¶ 100. A tampon containing a 20% aqueous solution of novocain with adrenalin may be placed in the floor of the nose to secure anesthesia of the nasal branches, when the structures to be operated upon receive their innervation from these nerves.

¶ 101. To reduce the pain due to the prick of the needle, local application of the anesthetic solution to the mucous membrane by means of a swab with applicator may be used. For this purpose either a 10%

Fig. 107

MANDIBULAR INJECTION

Photograph showing the second position of the syringe in the mandibular injection. The needle has passed the internal oblique line and is directed toward the lingual. On the way the solution is deposited to anesthetize the lingual nerve, and when three-quarters of the needle has disappeared in the tissue, the entire contents of the syringe are emptied. Such an injection anesthetizes one-half of the mandible. (See ¶93 and ¶95.)

cocain with adrenalin or a 20% solution of procain and adrenalin is used.

¶ 102. After an injection is made, the syringe should be emptied, the needle wiped off, a wire placed in the lumen and then sterilized.

¶ 103. Utmost care should be taken to carry out the correct technic in administering local anesthesia. The solution should not be con-

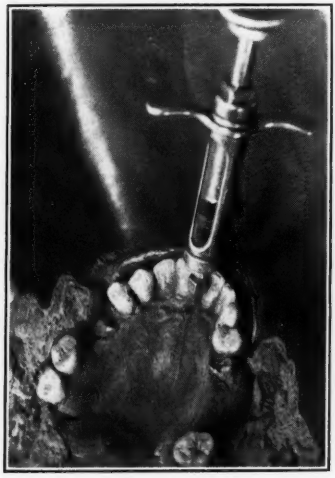


Fig. 108

Fig. 109

Fig. 108

INCISIVE INJECTION

Photograph showing the position of the syringe for an injection into the incisive foramina to obtain anesthesia of the anterior maxillary teeth. Note that while the needle is incorrectly inserted right into the papilla, the syringe is forced too far in. In this case the injecting needle enters the nasal floor and the patient becomes alarmed by consequent bleeding from the nose. To avoid this, the injection should be made as soon as the point of the needle disappears in the papilla.

Fig. 109

PALATAL INFILTRATION

Photograph showing the position of syringe ready to inject in the palate for obtaining palatal anesthesia for the removal of the premolars. Instead of an infiltration anesthesia obtained by the injection of the anesthetic solution at each tooth to be removed, the entire area of the molars and bicuspids may be anesthetized by one posterior palatine injection.

taminated; the area into which the needle is inserted should be painted with iodine; the point of the needle should be sharp; the solution should be injected very slowly; the anatomical landmarks should be well ascertained.

¶ 104. Accidents are likely to happen—many men have met with

Fig. 110

Fig. 111

Fig. 110

Posterior Palatine Injection

Photograph showing the position of the syringe and the point of insertion of the needle for injecting into the posterior palatine foramen and thereby anesthetizing the palate from the third molar to the canine region. An incisive injection, together with the posterior palatine, will completely anesthetize the entire half of the roof of the mouth.

Fig. 111

Tuberosity Injection

Photograph showing the position of the syringe as the tuberosity injection is made. The point of the needle is in the fold at the region of the second molar and is aimed toward the apex of the third molar. It is important to keep the point of the needle *close to the bone* and not to perforate any blood vessels so as to produce a hematoma or edema of the cheek.

them and no operator should feel that he is an exception to the rule, but by all means he should try to avoid them. One good way is *not to use a thin needle for giving a mandibular injection.* Another good way is not to "trust to luck" nor "take a chance."

¶ 105. Painless operations may be performed when the anesthesia is good, therefore an effort should be made by operators to ascertain beyond any degree of doubt whether the patient has good anesthesia before the operation is commenced.

355 East 149th Street.

(To be continued)

Togo's "Discursions"

Mr. Editor of Dental Magazine Comprising Outdoor Cover and Slightly Digestible Interior Departments

Hon. Sir:—

Month of April, starting off with day exclusively devoted to Fools, causes brain thoughts to reverberate in harmony with idea of assorted foolishness encountered in connection with pursuit of Hon. calling of Dental practice while doing so thruout ordinary lifetime. Many forms of peculiar trait are encountered in Dentists and all other Human Beings some of which will be extemporaneously ventilated in harmony with considerable observation among species usually chiefly considered in your pages.

Occupying first position of foolishness in long list of Contenders is self-satisfied near Human who succeeds in keeping himself convinced that he has already entered into personal possession of all knowledge now available on subject of tooth salvation and replacement.

Whenever delightful and instructive clinic is personally presented by thoughtful authority who has devoted high power brains to its development for long period of years, this first money winner in department of ambidextrous asininity puts in appearance with great success and enunciates delicious fact that he has been using processes and methods as just demonstrated for 10 to 27 years with great success and satisfaction. Arguments with these specimens is entirely unsuccessful; however, in most cases appearances of individual who is conducting intelligent demonstration is sufficiently superior to that of 2½ Amp. critic to enable intelligent bystanders to form correct opinions as to probable relative trustworthiness and general mental avoirdupois of both speakers.

At other end of discouraging panorama of foolishness is unhappy individual suffering from acute enlargement of strange idea that anything which he has just heard of or read about must therefore be greatly superior to whatever he is possessed of and accustomed to. Unhappy victims of this delusion spend almost entire lifetime and large proportion of net cash income in pursuit of new ideas, purchases of new appliances, inhalation of assorted postgraduate courses and other high-priced etc., without ever becoming complete masters of anything in particular.

Intentions and mental attitude of unfortunate slaves of superprogress just noted are like Wife of late Julius Caesar—entirely above suspicion; however, fact just noted by no means prevents sad results to patients who have been subjected to assorted mouth disasters which

become natural offspring of excessive theories and totally inadequate technical skill.

Dental services Mr. Editor constitute extremely peculiar commodity of great importance and splendidly assorted difficulties. Advanced theories and scientific investigations are of utmost importance but become of real value to Hon. Patient only when properly proved out by actual experience and created and installed by practitioner having sufficient skill to do so.

In solving all problems of preferred activities modern D.D.S. has wide opportunity to develop himself largely along line of natural inclination which will eventually lead to happiness for himself and beneficial services to Hon. Patients in increasing numbers.

Utter impossibility of any merely Human D.D.S. to so evenly develop all abilities in delightful Dental Practice so that supreme grade of excellence will be obtained in every branch of service to Hon. Patients is at once apparent.

All Human Beings are equipped with different powers and abilities only more so.

Infinite patience and high degree of inventive ability required in specialty of Orthodontia will probably always be found in only slight percentage of Hon. Graduate.

Members of superior muscular equipment and strong desire for visible results in shortest possible time will find attractive outlet for these qualities in Exodontia.

Between extreme endowments just noted will be found most practitioners of ordinary H. P. who develop themselves along lines of general practice—each one of these however will presently discover some personal ability which enables him to produce superior results along certain lines. Only slight intelligence Mr. Editor is needed to discover fact that lines of greatest ability when properly developed lead to greatest benefits to producer and consumer in all Human Relationships. Power of accurate self-analysis and honest estimation are important qualities and should be cultivated freely when present, for benefit of all parties concerned.

Variation in individual abilities is like law of gravity—observable but incomprehensible.

Two recent employers enjoying Japanese assistance in well appointed offices used same brand of near porcelain in cavities occurring in anterior teeth. Practitioner No. 1 entirely dispensed with rubber dam while inserting material of approximate tooth appearance, in swift and definite manner after it had been mixed rapidly to consistency of putty. Many fillings so inserted have remained on important job of tooth conservation for period exceeding ten years.

Practitioner No. 2 carefully adjusted rubber dam in every case—

according to directions accompanying each package—mixed delightful material in slow and fussy manner to about 80% of proper consistency and continued to annoy it during entire process of setting. Result—fillings of discouraging porosity and entire lack of polish which seldom stayed in tooth for even two dejected years!

In actual case cited both Hon. Gentlemen completely disregarded certain instructions broadcasted by Mfgr.

But in case of first man, other personal methods of securing result obtained by application of annoying rubber dam (dryness) completely corrected said violation of instructions and excellent fillings resulted.

In case of second man, disregard of instructions was of a fatal nature and nothing could correct same.

Instances similar to foregoing could be recited in all branches, but intelligent readers will be able to call on personal experience to supply balance of slight sermon more or less carefully concealed in foregoing brain thoughts.

Hoping you are the same,

Togo.

The Importance of Pathological Tests In Relation to General Dentistry*

By Nathaniel Freeman, D.D.S., New York, N. Y.

Within the last few years dentists have begun to realize more and more the necessity for a complete examination of their patients both physically and by means of laboratory tests. There is hardly a phase of dentistry in which diagnosis and treatment cannot be materially aided by laboratory findings. In this brief report the writer will indicate how these tests are applicable to general dentistry.

Examination of the Urine

Examination of the urine will often aid in the diagnosis of certain conditions, as, for example, in the failure of a socket to heal following extraction. The presence of sugar in the urine indicates a condition of diabetes and the case has to be treated accordingly. The significance of albumen in the urine is indicative of a disturbance in the circulation, or a febrile condition or a toxic condition due to poisoning by lead, arsenic, mercury, etc., or of severe anemias. Where the eliminative powers of the kidneys are impaired, we frequently find excessive deposits of calculi due to an increased elimination through the salivary ducts.

Blood Examination

Examination of the blood is highly important and a word might be said as to its normal constituents. The total number of *red blood cells* per c.c. averages between 4,500,000 to 5,000,000; the number of *white blood cells* varies from 6,000 to 10,000. *Coagulation time* is normally from two to eight minutes. It is usually more rapid in certain acute diseases, as pneumonia, and is less rapid in hemophilia and severe anemias. *Hemaglobin* normally ranges from 70 to 100%.

The facts of clinical importance which we endeavor to obtain from the blood concern chiefly variations in the morphology and numbers of the red and white cells and the relative hemaglobin content of the red cells.

Small quantities of blood, such as are required for microscopical examination, in the fresh condition or dried and fixed on the slide are best obtained by puncturing the skin of the lobe of the ear or the tip of the finger.

By means of various instruments known as *blood-counting pipettes* and a counting chamber, the enumeration of the white or red blood cells can be made.

* From a clinic given before the First District Dental Society, New York, December 8, 1926.

Abnormal counts of either white or red cells are always indicative of some disturbance in the body, as, for example, when a patient presents with a swelling of the face, with or without possible fluctuation, and with an indefinite history. It is often wiser to obtain a blood count before using operative measures. Very frequently these cases are incised with the expectation of getting pus, and the operator is surprised to note that only blood or serum is obtained. Were pus present, a blood count would invariably reveal the presence of a leucocytosis (an increase in the number of leucocytes). This would be substantiated by what is known as the *differential count,* which would reveal a high polymorphonuclear count.

In suspected anemias, or where hemophilia is to be considered, a blood count is also of great value. The enumeration of the red cells would reveal an exceedingly low count. The coagulation time would be considerably less rapid than normal. These tests are quite simple and can be performed in a very short time, thus avoiding any possible complications or fatalities.

The examination of the blood in suspected syphilis gives an accurate diagnosis by means of the Wassermann test. All suspected lesions in or about the oral cavity should be checked up with this test.

Bacteriological Findings

The application of bacteriology to general dentistry cannot be overemphasized. It is an important guide in root-canal therapy. There is nothing more ridiculous in the realm of dentistry than the methods of some practitioners who rely upon their visual or olfactory senses to determine whether or not a root canal is ready for filling. Proper smears and cultures are the only scientific basis by which to control root therapy. The question of the pulpless tooth will be greatly clarified if thorough attention is paid to the bacteriology of the canal before possible infection is sealed up.

Dressings that have been sealed in root canals for twenty-four hours may be smeared upon a slide, allowed to dry, fixed with heat, stained, washed and examined under the microscope. This method requires but a few minutes.

By means of smears from the gingiva, lesions which are clinically inconspicuous are recognized through a simple microscopic examination of stained smears.

Bacteriological methods will be found valuable in a diagnosis of suspected cases of Vincent's and in determining the progress of the treatment when the presence of Vincent's is known.

Where lesions present themselves in or about the oral cavity and appear to be of a cancerous nature, it is quite possible to remove either

a small portion or the entire lesion and have this sectioned and stained and examined by a pathologist.

All of the above-mentioned tests lend themselves toward aiding the dentist in making a proper diagnosis and hence better treatment is instituted.

5 East 57th Street.

Gold Inlays*

By William Dwight Tracy, D.D.S., F.A.C.D., New York, N. Y.

A SUMMARY

A great deal has been written about gold inlays, but it is the opinion of the essayist that a method which occupies such an important place in the general practice of dentistry cannot be considered too trite for discussion.

For a number of years different types of inlays have been used—porcelain rods, glass inlays and high- and low-fusing porcelain inlays. Gold inlays also were made by burnishing a platinum matrix into the cavity and filling it with solder. Two-piece swaged inlays were constructed on dies which were first made of cement, then of Melotte's metal, and finally of amalgam. These inlays were far from perfect, yet some dentists have turned out very creditable work, especially with the last-named method.

An associate of the essayist was accustomed to fill deep buccal cavities with gutta-percha with a veneer of gold swaged over it for protection. Pins were soldered to this covering, which was heated and then pressed into the gutta-percha.

In January, 1907, William H. Taggart of Chicago appeared before the New York Odontological Society and demonstrated the making of gold inlays by the casting method. The results achieved caused one of the greatest ovations ever witnessed at a dental meeting, but probably no one then foresaw the far-reaching possibilities of this type of work.

The casting process not only has revolutionized operative procedure, but has made possible the great advancement in bridgework and partial denture prosthesis. It has had one bad effect in that the younger men and some of the older practitioners have abandoned the use of gold foil to a large extent. The manipulation of gold foil teaches a dexterity and a skill that are of great use to the dentist in all his operations.

The essayist procured one of the earliest of the casting machines

* This paper was read before the First District Dental Society, New York, November 1, 1926.

and, after trying the direct method, turned to the indirect method as giving the best results. In this way the time at the chair is greatly shortened and with the assistance of competent laboratory men the inlays are most satisfactory. The technician must be carefully trained to do painstaking work, and anatomical conformations must be accurately reproduced.

For restoring lost tooth structure the cast gold inlay has no superior. It is indicated in all compound cavities in molars and bicuspids, in buccal cavities not exposed to view, and in the distal of cuspids. It may be used in corners of the anterior teeth with a silicate inset. It is limited only by the necessity of conserving pulps and by esthetics.

In spite of this strong advocacy of the gold inlay, the essayist does not wish it to be understood that other filling materials have not their place, especially gold foil. However, he feels that when indicated he can render his patients the best service by using the cast gold inlay.

The Dental Society of the State of New York
Preliminary Program

The 59th annual meeting of the Dental Society of the State of New York will take place at Hotel Statler, Buffalo, N. Y., May 18-20, 1927. Literary exercises, clinics and exhibits will be held at Hotel Statler.

The Executive Committee will convene for the transaction of the business of the Society on Tuesday, May 17, at 3:00 P. M., at Hotel Statler.

Educational courses will be given on May 16 and 17. Application for registration should be made to Dr. J. G. Roberts, 207 East Ferry Street, Buffalo, N. Y. Full information about these courses will be furnished on application. A cordial invitation is extended to the members of other State Societies to avail themselves of the opportunity to take these educational courses.

Literary Program

The Use of Porcelain in Dentistry..Albert L. LeGro, Detroit, Mich.
The Fundamental Reasons for the Universal Failure to Bring About a Permanent Cure of Pyorrhea,
Thomas B. Hartzell, Minneapolis, Minn.
Prosthetic Dentistry.....Alexander H. Patterson, Baltimore, Md.
The Modern Fixed Bridge, Its Construction and Application,
O. DeForest Davis, Minneapolis, Minn.
Operative Dentistry.....William A. Jaquette, Philadelphia, Pa.
Address.....Alfred C. Fones, Bridgeport, Conn.

Educational Courses

Tooth Preparation for Gold Castings..Charles K. Buell, Buffalo, N. Y.
The Scientific Removal of Teeth—A. Berger, New York, N. Y., Edward T. Butler, Buffalo, N. Y., Henry S. Dunning, New York, N. Y., G. G. Pritchard, Buffalo, N. Y., C. E. Rose, Buffalo, N. Y.
Treatment of Pulpless Teeth and Root-Canal Technic,
Edouard M. Hall, Kansas City, Mo.
Full Denture Prosthesis.....Arthur T. Rowe, New York, N. Y.
Partial Restorations.....J. Galvin Woodworth, Buffalo, N. Y.
Oral Radiography and Diagnosis.Clarence O. Simpson, St. Louis, Mo.

There will be an Oral Health Dinner at Hotel Statler, Thursday evening, May 19. Prominent public officials are to be present and addresses and demonstrations of the highest order will be given.

During the time of the meeting of the New York State Dental

Society, sessions of the New York State Dental Hygienists Association and the Dental Assistants Association will be held.

Every effort is being put forth to make this meeting one of the most attractive in the history of the Society. Reduced railroad rates have been secured.

A cordial invitation is extended to all ethical practitioners. Admission to the literary meetings and clinics may be secured by registering and presenting membership cards in State or National Societies. Headquarters will be at the Hotel Statler and reservations should be made direct with the hotel management.

For further information and programs address

A. P. Burkhart, Secretary,
57 East Genesee Street, Auburn, N. Y.

Dr. Kells Honored

On January 19, 1927, Dr. C. Edmund Kells was doubly honored for his lifelong devotion to the dental profession. The honorary degree of Doctor of Laws was conferred upon him by Tulane University, and a Dental Library and Museum was dedicated in his name. Dr. Rudolph Matas, the celebrated surgeon, gave an address in which he described the notable work done by Dr. Kells and the benefits he had bestowed on humanity.

A Loving Cup for Service

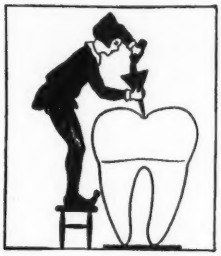
Dr. Lawrence W. Baker, professor of orthodontia at the Harvard Dental School, has received from the orthodontic staff of the school a silver loving cup in recognition of his completion of twenty-seven years' service to the school.

An Example to Follow

In Philadelphia recently Dr. J. Sim Wallace of London made the statement that there were in England today 20,000,000 less decayed teeth in children of school age and younger than there were a few years ago. This remarkable condition has been brought about through the dissemination of knowledge to parents.

If these results can be achieved in England, it can certainly be done here. We are reproducing a circular (on opposite page) sent out by the Massachusetts Department of Public Health. This might well be copied by other organizations.

Prevent Tooth Decay



Fill Those Fissures

HOW

Take the child to the dentist when a new tooth appears. 85% of all molars come through the gum with cracks or Fissures in the surface. This is because the enamel was not formed perfectly when the tooth was growing.

If a crack is found the dentist will smooth it out and fill it.

WHY

A fissure is no larger than one bristle of a toothbrush. Brushing cannot keep it clean. Food immediately gets in the crack and DECAY STARTS.

WHEN

The critical ages for fissure work are

2—3 years	baby set is complete
5—7 years	six year molars
9 years	bicuspids
12 years	twelve year molars

Filling fissures is the first step. To insure against further trouble of all kinds the teeth should be examined every six months.

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

DENTAL LAWS

Summary of Dental License Requirements Throughout the World

By Alphonso Irwin, D.D.S., Camden, N. J.

UNITED KINGDOM OF GREAT BRITAIN AND DOMINIONS IN EUROPE—A SUMMARY

ENGLAND

Applications from persons possessing American dental qualifications have to be especially considered by the Council, and as a rule they are not successful. The curriculum in America is usually three years instead of four and does not include the general hospital work required in this country.

The best course to pursue is to obtain a British qualification, and for the terms upon which this may be secured write to the Secretary of the English Conjoint Board, 11 Queen Square, Bloomsbury, W. C. 1, London, England.

UNITED KINGDOM OF GREAT BRITAIN AND IRELAND

There is no dental law peculiar to (North) Ireland, inasmuch as the Dentists' Acts of 1878, 1886, 1921, 1923, of the United Kingdom cover this country as well as England, Scotland and Wales, and all license requirements are therefore the same.

Official advices from Dublin, Irish Free State, do not mention a separate dental law for that republic. Address the Registrar of the Royal College of Surgeons, Dublin, Ireland.

SCOTLAND

The practice of dentistry is controlled by the British Dental Acts of 1878 as amended in *Scotland* and of 1921-1923, covering the *United Kingdom.*

For further information address the Registrar of the University of Edinburgh, Scotland. Verified March 25, 1926.

GIBRALTAR

The English language, medical supervision, registration required. Address the Colonial Secretary, or the Secretary of the Medical Board.

MALTA

The English language, medical supervision, registration required. Address the Registrar of the Medical School, University of Malta, at Malta, for other details.

IN AUSTRALIA

Dental Acts are dated 1880, 1884, 1890, 1900, 1902, 1903, 1908, 1909, 1913, 1915, 1917, 1919.

The Commonwealth of Australia consists of six principal States and one Federal territory, each State possessing its own dental laws or regulations. The dental laws require the use of the English language, examination, a license, and registration. Medico-dental supervision is exercised with the authority vested in the Senate of the State University located in the capital of the State, which also establishes the schedule of fees, the standards of predental education, apprenticeship and professional training required from candidates for a license to practise dentistry in Australia. The N. A. D. F. of the U. S. A. is recognized, but British credentials are most acceptable, and an L.D.S. or a dentist licensed and eligible for registration in other parts of the United Kingdom of Great Britain and its Colonies, is eligible for presentation and, if accepted, for registration in Australia upon payment of registration fees. Address the Secretary-Registrar of Dental Examiners of Board functioning in the State where it is desired to obtain a license.

The Secretary-Registrar's offices are located in the capital of each State. Address the Registrar, N. S. W. Dental Board, Sydney, N. S. W.; Wynn Needham, Registrar, 45 St. George St., Perth, Western Australia; E. Joske, Registrar, 454 Collins St., Melbourne, Victoria; T. B. Hunter, Registrar, Brisbane, Queensland, Australia; F. W. Horricks, Registrar, Hobart, Tasmania.

NEW ZEALAND

The Dominion of New Zealand is usually associated in the minds of many persons with Australia, although it does not form a part of that commonwealth, being about twelve hundred miles away from it. Wellington is the capital. The dental enactments are dated 1880, 1904, 1908, 1910, 1911, 1922. Examination, license, registration, and the English language are required. Medico-dental supervision is exercised by the Senate of the University of New Zealand. Address the Registrar-General, Wellington, New Zealand, for other details.

DOMINION OF CANADA

English language, university dental supervision, examination, registration and recognized credentials are required. Each province and island operates under its own dental acts. See Canada for other details, and address the Secretary or Registrar of the Board of Dental Examiners, at the capital of the province in which you desire to locate. These provinces include Alberta, British Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario, Quebec, Saskatchewan, Yukon; also the Northwest Territories and Prince Edward Island.

Dominion of Canada, Newfoundland and Labrador, and British Islands Adjacent

Dental students are informed that a university degree in dentistry does not always give a right to practise the profession of dentistry. It is necessary to conform to the Dental Laws of the country or state, island or province in which it is proposed to begin practice. Every province in Canada at present has its special requirements for license, and in most provinces a special standard of general education is insisted upon before beginning the study of dentistry. Students who intend to practise in Canada are advised to register their qualifications in the province in which they intend to practise at the *beginning* of their course in dentistry.

Dominion Dental Council

The Dominion Dental Council of Canada is a central organization under the control of the dental profession of Canada. Its object is to erect and maintain a standard of education and ethics for the dental profession and to conduct professional examinations and issue certificates of qualification which shall be accepted without further examination by the provinces. For information concerning the requirements of the Dominion Dental Council, apply to Dr. W. D. Cowan, Secretary of the Dominion Dental Council, Regina, Sask., or to the Dental Registrar of any province.

The Canadian Provinces, all but Quebec, have entered into an agreement whereby the holder of a license granted by the Council may practise in any of the subscribing provinces on the following conditions:

(1) Holding a matriculation certificate of the proper standard.

(2) Passing the examinations set by the Council.

(3) Paying the local provincial registration fee.

For matriculation the Council accepts the Junior matriculation of the Province of Ontario or matriculation in the Faculty of Arts of any Canadian university.

Certificate of Qualification: The certificate of qualification bestowed

by the Dominion Dental Council, after examination, is registrable upon the payment of the local registration fee in all the provinces of Canada except Quebec. It permits the use of the letters D.D.C. (Dominion Dental Council) to any one holding it.

Union of South Africa

"We accept approved qualifications of Great Britain and Ireland. I use the word *approved,* for we do not accept for registration the large number of dentists who have recently been placed on the Register of Great Britain, sine curriculo, under the Dentists' Act of 1921. In regard to foreign qualifications, none has been accepted so far, but it would certainly be a condition of acceptance that full rights of practise must be given to dentists holding British qualifications in the country where the applicant has obtained his degree. An exception is made, however, in the case of British subjects, South African by birth or domicile, who may obtain a foreign degree. The degrees which have been so recognized are: D.D.S. (Penn.), D.D.S. (Mich.), D.M.D. (Harvard), held in conjunction with the diploma of the respective State Board, and Tandarts, Holland.

"The course in dentistry in the local university is in the embryo stage; that in the Cape Town University is more advanced."

(Signed) Ewald Herbert, *Secretary,*
81A Von Brandis St.,
Johannesburg, U. of S. A.

WEST INDIES

The more important islands of the British West Indies, as well as in other parts of the world, have a separate Dentists' Act. So also have the colonies, mandates and possessions. 35 Acts are operative in the United Kingdom.

PRACTICAL HINTS

This department is in charge of V. C. Smedley, D.D.S., and George R. Warner, M.D., D.D.S., Suite 1206 Republic Building, Denver, Colorado. To avoid unnecessary delay, Hints, Questions and Answers should be sent direct to them.

NOTE—Mention of proprietary articles by name in the text pages of the DENTAL DIGEST is contrary to the policy of the magazine. Contributions containing names of proprietary articles will be altered in accordance with this rule. This Department is conducted for readers of the DENTAL DIGEST, and the Editor has no time to answer communications "not for publication." Please enclose stamp if you desire a reply by letter.

Editor Practical Hints:

I have always been taught to inject somewhat distal to the apex of the given tooth (excepting the upper cuspid), but a recent writer says that novocain *always travels distally* so must be injected mesially. How about it?

B. R. E.

ANSWER.—In all probability you were taught to inject somewhat distal to the apex of the given tooth to avoid the complication of getting into an infected area immediately adjacent to the apex. If you are injecting for cavity preparation, it is better, if possible, to make the injection immediately over the apex, where the novocain will have the most immediate and profound effect upon the nerves.

In doing an interosseous it is safer to make the injection either mesially or distally rather than immediately over the apex, for fear of injuring the root itself.

Novocain spreads quite evenly in every direction from the point of injection, unless there is a difference in the tension of the tissues.—G. R. WARNER.

Editor Practical Hints:

I have a patient who experiences a drawing sensation of the gums where the posterior teeth have been extracted. The patient has anterior teeth above and below. This condition has existed for a number of years and is so annoying as to cause extreme nervousness. The only relief he can get is to chew gum or tobacco. Could you suggest a remedy?

L. C. B.

ANSWER.—It would be well to radiograph the alveolar bone in the areas where your patient complains of the drawing sensation, with the thought that there is some residual infection. If there is no residual infection and there has been no injury to the nerve, and if the patient does not wear partial dentures which could be blamed, I should not know what to do.—G. R. WARNER.

Editor Practical Hints:

Several months ago I extracted an upper first molar with roots extending into the antrum. An opening through the socket into the antrum still remains. Can this in any way be closed?

R. H. B.

ANSWER.—The first thing to do is to be sure that the antrum is not infected. When the washes have come perfectly clear and clean for several days and the fact of there being no infection in the sinus above is established, you can resect the muco-periosteum and close the opening in the floor of the antrum. If there is no infection in the antrum, and if it is not acting as a reservoir for the sinuses above, the opening will in all probability remain closed.—G. R. WARNER.

Editor Practical Hints:

Recently I had a case that was a stumbling-block to me. I gave a mandibular for the removal of a left lower first molar, which had no swelling and which the patient said ached.

After waiting for about fifteen minutes, I had the symptoms of anesthesia, i. e., the left side of tongue and left lip felt frozen. However, when the tooth was pressed upon, it ached.

I then infiltrated on both the buccal and the lingual sides, so that I had all the soft tissues anesthetized. Yet, when I went to extract, the patient complained of pain in the jaw bone.

What could be the explanation? Does the drug affect a person who is addicted to drugs or whiskey? Or could it possibly be that the solution had deteriorated, or was the technic poor? Is it necessary to inject the solution at or about the mandibular foramen, which I did not do, because I did not feel the bone when injecting?

M. S. H.

ANSWER.—I should judge from the description of your case that the mandibular injection produced only a partial anesthesia. In these partial anesthesias one may have an anesthesia of the tongue and lip, but not a good anesthesia of the inferior dental nerve. The needle should pass along the surface of the bone just before reaching the fora-

men to produce the best results. This is probably where your technic was faulty. It is necessary to have the solution at or about the mandibular foramen.—G. R. WARNER.

Editor Practical Hints:

I want to ask you just what you would do to prevent a little girl eight years old from sticking her tongue out of her mouth and putting it between her lower teeth and lip.

J. S. S.

ANSWER.—This particular habit can be broken up very quickly and satisfactorily if the mother is willing to cooperate to the extent of fastening the lips and jaws together with adhesive tape, extended up on the face at each side of the nose, across the lips and terminating under the chin. It might be well to leave it on overnight or between meals at first, and if the child is bright and has a good memory, that might be sufficient; but if not, I should leave it on all day or for twenty-four hours the next time. She could be fed liquids through a straw.

This is rather drastic, but it would certainly break up the habit and thus prevent the possible development of a more serious condition to combat later on.—V. C. SMEDLEY.

Editor Practical Hints:

On Page 720 in October's DENTAL DIGEST you answer H. H. H.'s query relative to burning sensation in tongue and lips.

What remedy would you suggest, if any, where the burning sensation was slight before the patient ever had any dentures? After three months of practical comfort this sensation has become unbearable and causes nausea for about fifteen minutes each morning immediately after insertion of the dentures.

O. W. W.

ANSWER.—Some of these cases of burning sensation are extremely difficult to handle satisfactorily.

The series of things that I know of to try are: relieve the nerve pressure over the foramina and their distribution areas; remake the plates with metal bases, preferably gold, but if the discomfort persists enough to justify so radical a procedure, an operation may be performed on the nerve trunk or an alcohol injection may be made, as is sometimes resorted to in cases of tic douloureux.—V. C. SMEDLEY.

Editor Practical Hints:

I have a patient, 7 years old, who has lost the upper right cuspid

and first molar through absorption. Both upper laterals are coming in irregular. She has been carefully fed—plenty of orange juice, lettuce, spinach, carrots and lots of milk (pasteurized).

The child is in good health. A suggestion as to the cause would be appreciated.

F. M. M.

ANSWER.—The premature loss of temporary teeth is not unusual in children in apparently normal health. It is possible that an accident early in life irritated these teeth enough to start the osteoclastic action. There is also the possibility of a dentigerous cyst. A radiogram of this area will be interesting and possibly would furnish the information which you desire. Evidently everything in the way of proper diet is being attended to.—G. R. WARNER.

Editor Practical Hints:

On opening the flask after vulcanization I find that the plaster is soft, while formerly it was hard and difficult to dig out of the flask. What is causing this change? Is it likely to damage my work?

L. G. C.

ANSWER.—It is a very common experience that in some cases the plaster in flasks is soft and granular upon opening, while in other cases it is hard and dry. I have never found any explanation for this except in the matter of the amount of water left in the vulcanizer and the time that the vulcanizer has been left unopened after vulcanization.

The plaster is not apt to be granular if the vulcanizer is opened immediately, and I believe it is not so apt to be granular if the vulcanizer is nearly dry. So far as I have been able to determine, the condition of the plaster upon opening the flask has no influence upon the work.—G. R. WARNER.

DENTAL SECRETARIES and ASSISTANTS

Secretaries' Questionnaire

All questions and communications should be addressed to Elsie Pierce, care of THE DENTAL DIGEST, 220 West 42nd Street, New York City.

NOTE—HAVE YOU A BETTER WAY? HAVE YOU A TIME-SAVING SHORT CUT? DO YOU KNOW A "STUNT" THAT LIGHTENS THE WORK OR MAKES FOR EFFICIENCY IN THE OFFICE? IF SO, WRITE TO ELSIE PIERCE, CARE THE DENTAL DIGEST, 220 WEST 42ND ST., NEW YORK. YOU MAY HELP A NUMBER OF GIRLS WHO ARE JUST BEGINNERS—AND YOU KNOW HOW YOU NEEDED HELP DURING YOUR FIRST FEW MONTHS IN A DENTAL OFFICE. OR IF YOU NEED HELP NOW WRITE TO ELSIE PIERCE—SHE'LL HELP YOU.

Dear Miss Pierce:

I have considerable difficulty in keeping the instruments polished. They seem to accumulate rust stains and get dark-looking. It may be that I do not use the right method in cleaning and sterilizing. I am sure that other assistants have the same trouble. Please tell us just what to do.

I have been a constant reader of your department ever since its beginning. I think it is very helpful and must be of great assistance to those who read it carefully.

S. J., N. Y. C.

ANSWER: The proper care of the instruments used in a dental office is one of the most important duties of the assistant. There is nothing more unpleasant, from the patient's point of view, than to have rusty or discolored instruments used in the mouth, not to speak of the satisfaction on the part of the dentist always to have at hand instruments that are bright and sharp. The two chief causes of discolored and rusty instruments are neglect and improper care in sterilization. The following are a few rules that, if observed faithfully, should solve your difficulty:

(1) Instruments should always be cleaned thoroughly before sterilizing. A stiff brush, soap and hot water should be used to cleanse

thoroughly every particle of debris or other matter that may have adhered thereto, and stubborn spots should be polished off with pulverized chalk and a soft cloth.

(2) To the water used in the sterilizer should be added a noncorrosive agent, such as a teaspoonful of bicarbonate of soda and a teaspoonful of a 30% solution of sodium nitrite (not nitrate) to each quart of water. Sodium biborate (borax) also is used for this purpose.

(3) Instruments should be cleaned immediately after use and should not be left in the sterilizer beyond the time necessary for complete sterilization. Upon removal they should be dried very carefully and placed in the trays or wraps used for that purpose. Instruments that are not in constant use should be stored in a dry place, away from the fumes of any corrosive acids or medicaments. Iodine, one of the drugs found in every dental office, is often stored in the instrument cabinet, or close to where instruments are kept, but its fumes will darken instruments very quickly. Iodine should be kept in a ground-glass stoppered bottle, which in turn should be placed in another glass container tightly covered.

(4) The sterilizer should be thoroughly cleaned and emptied at least once a day.

The nickel plating on instruments protects them under ordinary conditions, but not against more powerful corroding actions, and it is these that must be guarded against.

Sharp instruments are necessary if careful operations are to be performed with a minimum of discomfort or pain to the patient. The careful sharpening of instruments can be taken care of by the assistant, if the dentist will instruct her in this technic and provide the necessary equipment. Many dentists do not want their sharp, cutting instruments sterilized by boiling, as this dulls the temper of the steel.

Dear Miss Pierce:

Will you please tell me what materials and proportions to use for making an eight-ounce bottle of sandarac?

M. M. D., S. D.

ANSWER: Sandarac varnish solution is usually made in bulk and kept on hand in a reserve container, from which small vials or bottles are filled for every-day use. The following is a simple and easy way to make this solution.

Procure a two-quart size of Mason or other jar and in it place a half-pound of sandarac gum and a quart of alcohol. Put the top in place sealed with a rubber ring. This will permit the jar to be shaken, while the gum is dissolving, without spilling or evaporating. When

the gum has been thoroughly dissolved and allowed to stand for 24 hours, strain through a double thickness of cheese-cloth into another jar, being careful not to stir up the sediment which may have settled at the bottom of the container. Let this strained solution stand for another 24 hours or more and again strain into the reserve container, from which you can fill any size of bottle you desire. If you wish the varnish to be thinner, simply dilute with alcohol to the consistency desired.

Dear Miss Pierce:

I have read many good suggestions in your department which have helped me not only in the office but also at home, so I am sending one in return.

"Where do all the discarded silk stockings go?" Mine are converted into perfectly wonderful dusting cloths that are soft, easy to keep clean, and do not shed lint. Rip the stocking down the back seam from top to toe, sew together, placing the foot of one to the top of the other, using one or two pairs according to the size of cloth you desire.

Yours for economy and efficiency, a dental assistant who keeps her office dusted.

(Iowa)

Educational and Efficiency Society

FOR

DENTAL ASSISTANTS, FIRST DISTRICT, NEW YORK, INC.

The Educational and Efficiency Society for Dental Assistants, First District, New York, held its regular meeting on March 8, 1927, at the Academy of Medicine, New York. Ilsley S. Zecher, D.D.S., gave a very interesting talk on *The Grenfell Mission in Labrador,* illustrated by lantern slides, and told many general facts about Labrador and its inhabitants as well as about the work of the Mission along dental, medical, and industrial lines. *Health Reminders* was the topic of a short but instructive lecture by Miss Elma Warner, Teacher of Physical Training, Erasmus Hall High School, Brooklyn, in which she offered much practical and sensible advice for maintaining health.

It was announced that the sixth annual dinner of the Society will take place at the Hotel Astor, New York, on Saturday, April 30, 1927. The committee in charge, Emily Campbell Clifford, Chairman, is planning special musical features, and prominent members of the

dental profession have signified their intention of being present. The Chairman may be reached at 1716 Caton Avenue, Brooklyn, N. Y.

The Society meets regularly at the Academy of Medicine on the second Tuesday evening of each month, October to May, inclusive. An invitation to join is extended to dental assistants. Martha Keit, 32 Court Street, Brooklyn, N. Y., is Chairman of Membership and will be glad to furnish further information. A cordial invitation to attend the meetings and clinics of the Society is extended to the members of the dental profession.

A lecture and clinic on the proper care of hypodermic syringes and needles and the proper preparation of solutions was given by Mr. R. C. Ball at the meeting of the Educational and Efficiency Clinic Club at the office of Dr. W. B. Dunning, 140 East 80th Street, New York, on February 15, 1927. The speaker explained the care and sterilization of syringes and needles and also described the composition and manufacture of novocain tablets, ampules, and carpules.

Mae Quinn and Mary O'Connor reported on the demonstration given on Friday, February 11, before the Fifteenth Anniversary Meeting of the Kings County Dental Society at the rooms of the Allied Dental Council, New York. These clinics were on sterilization, chair assistance, and x-ray assistance, and aroused much interest and enthusiasm from the dentists and dental assistants present.

It was announced that demonstrations will be presented before the Fifty-ninth Annual Meeting of the Dental Society of the State of New York at Buffalo, May 18-20.

The regular meetings of the Club are held on the third Monday evening of each month, September to May, inclusive. The various phases of dental assisting are studied and in the discussion and interchange of ideas newer and more efficient methods of office procedure are evolved. The Club is open to the members of the Educational and Efficiency Society for Dental Assistants, New York. Jean Tallaksen, Acting Director, 24 State Street, New York, urges the cooperation of all.

A RESOLUTION

At the annual session of the American Dental Assistants Association in Philadelphia, Pa., in August, 1926, the recommendation was made by the President and adopted by the House of Delegates that the affiliated societies adopt a resolution at one of their meetings during the coming season similar to the one passed by the American Dental Assistants Association at Louisville, Ky., in September, 1925, and re-

affirmed at the 1926 session, and that a copy of this resolution passed by the affiliated societies be sent to the Deans of the recognized dental schools in their respective states. In accord with this recommendation the following resolution was adopted by the Educational and Efficiency Society for Dental Assistants, First District, New York, at the regular meeting on February 8, 1927:

Whereas: Education is the fundamental power underlying all human activities, and

Whereas: The calling of the dental assistant or nurse and the service she renders to humanity require a special training that she may intelligently perform her duties, and

Whereas: There has been no opportunity for her to secure the necessary education and training that will qualify her as a trained dental assistant or nurse because of lack of departments in dental schools equipped to give this education and training; be it

Resolved: That the Educational and Efficiency Society for Dental Assistants, First District, New York, Inc., on this 8th day of February, 1927, in meeting assembled earnestly petitions the Deans of the recognized dental schools of the State of New York for the establishment of a department in said dental schools for the proper education and training of young women who seek to serve humanity in the capacity of dental assistant or nurse. Be it further

Resolved: That a copy of this resolution be forwarded to the Dean of every recognized dental school in the State of New York.

Respectfully submitted,

EDUCATIONAL AND EFFICIENCY SOCIETY FOR DENTAL ASSISTANTS, FIRST DISTRICT, NEW YORK, INC.

Attest. Juliette A. Southard, President
Robina McMurdo, Secretary

On Tuesday evening, April 12, 1927, at eight o'clock, at the Academy of Medicine, 2 East 103rd Street, New York, a regular meeting of the Educational and Efficiency Society for Dental Assistants, First District, New York, will be held. Herbert D. Pease, M.D., will speak on *Bacteriology, As It Relates to the Activities of the Dental Assistant.* The lecture will be illustrated by lantern slides. There will be also a well-known woman speaker on the program, who will discuss a topic from current events. The members of the dental profession and their assistants are cordially welcome.

Montreal Dental Assistants Association

The February meeting of the Montreal Dental Assistants Association was held at the University of Montreal. Mme. Guay, President, introduced the speaker of the evening, Dr. J. Nolin, Vice-Dean of the University of Montreal and member of the Advisory Board of the Association, who spoke on the subject *Operative Dentistry,* followed by a demonstration of practical work.

The Clinic Class was held at the McGill University Medical Building on February 28, 1927. Miss R. Firth, Chairman, presided. The speaker was Dr. J. S. Dohan, Associate Professor of Prosthetic Dentistry, McGill University, who spoke on *Laboratory Technic.* Miss M. L. Parker, R.N., who is the organizer and teacher of the Trained Attendants' Association, spoke on *The Advantages of Organization,* a talk that was beneficial to every one present.

Educational and Efficiency Society for Dental Assistants of Pittsburgh, Pa.

The Educational and Efficiency Society for Dental Assistants of Pittsburgh held its regular monthly meeting on Friday, February 18, 1927, in the Assembly Room of the Westinghouse Building, Pittsburgh, Pa., with Miss B. M. Williams of Oil City, Pa., Acting President, presiding.

The members are attending weekly classes at the University of Pittsburgh, at present taking prosthetic work.

ALICE V. JEFFREYS, *Corresponding Secretary.*

Books Received

A BOOK MAY BE AS GREAT A THING AS A BATTLE—DISRAELI

Principles of Exodontia As Applied to the Impacted Mandibular Third Molar, by George B. Winter, D.D.S., F.A.C.D., Professor of Exodontia, Washington University School of Dentistry, St. Louis; Former Teacher of Exodontia, Extension Course, Columbia University, New York; Associate Member of the Section of Maxillo-Facial Surgery in United States Government School, Organized during the World War.

A review of this book, which is described on the title page as a complete treatise on the operative technic of the impacted mandibular third molar, with clinical diagnoses and radiographic interpretations, is almost superfluous. Dr. Winter stands alone as the foremost operator in this field and anything that he may say on the subject may be regarded as authoritative. This book is the result of many years of study and research and hard work.

In his preface the author says: "The operative technic described is based on the clinical examination and the radiographic interpretation of the impacted tooth and its supporting structure. The object to be attained is the elimination of explorative manipulation in advance of or during the operation, and to substitute for guesswork a definite method for the procedure, so as to decrease materially the trauma and avoid the complications that are usually associated with the extraction of the tooth."

Two hundred and eighty pages, nearly one-third of the contents, are devoted to the taking and the interpretation of radiograms. Not a single condition that may have a bearing on the diagnosis or the conduct of the operation is overlooked. This attention to detail may seem superfluous to many, but any one who has seen Dr. Winter operate realizes that it is the very foundation of his technic. There is no hesitation. He knows beforehand just what he is going to do and he proceeds to do it in a minimum of time and with the least amount of trauma.

In regard to instruments he says: "Failure to obtain ideal operative results may follow the use of an incorrectly designed instrument, and, on the other hand, failure may be the result of a correctly designed instrument that is improperly applied." It stands to reason that a man who has developed a certain technic knows best the instruments that

go with it. Too many dentists are prone to modify a procedure that has been carefully perfected and then they wonder why they do not attain satisfactory results.

The part of the book devoted to operative technic is very explicit and is splendidly illustrated by photographs and drawings. A chapter is given to each of the various classes of impactions. The only criticism is that the whole thing is made to appear so simple that it is hardly possible to believe that an impacted third molar could be considered a difficult extraction. It is only necessary, however, to recall one's own experiences.

The book is excellently gotten up and no pains have been spared in making it a model of what a professional book should be. The illustrations, both photographs and drawings, are admirable.

This book should be in the library of every one who is at all interested in the specialty of exodontia, and there is little danger that it will lose its place as an authority for a great many years to come. 835 pp., with 834 illustrations and index. St. Louis, Mo.; American Medical Book Company, 1926.—A. M. J.

EXTRACTIONS

No Literature can have a long continuance if not diversified with humor—ADDISON

Doctors say that fatal diseases are the worst.

If our mistakes teach us nothing, it isn't worth while to make them.

Only children have the divine gift of taking their play seriously.

A Wise Crack

So live that it doesn't make any difference what color your roadster is.

Wouldn't it be awful if spinach hain't really healthful after all th' trouble it takes t' git th' sand out of it?

A Test for Hooch

Open one bottle and hold close to nostrils. If the rim of your hat drops off inside of three seconds it is bad liquor.

And Then It Rained

The gardener is a man of woe.
Above his beds the freshets flow.
He needs a paddle, not a hoe.

The rains descend, the floods arrive.
To find his phlox he has to dive.
His roses climb to keep alive.

The lightnings flash, the thunders roar,
His coreops are mainly core,
His glads are sads and nothing more.

His flowering beans have got the willies,
A sandbar tells him where each hill is,
He should have planted water lilies.

Yet comforted he goes and goes on,
Reminded, as he broods his woes on,
He doesn't need to turn the hose on.

This is a strange, uncertain and inexplicable world my dear friends. We are here today, but tomorrow we may be in—Chicago!

(Bill)—Hello, Jake! What you lookin' so gloomy about?

(Jake)—Just been to the dentist again, and I don't like his work no how.

(Bill)—Why do you go back to him if you don't like him?

(Jake)—I have to; I'm reading a continued story in one of his magazines.

A friend tells us the story of a Scotchman who, when his opponent had a sunstroke during a golf match, insisted that he count it.

Good Salesmanship

Two salesmen were discussing their respective abilities to sell.

"In two hours this morning," said the first, "I sold over ten thousand dollars worth of goods to three different department stores. Can you beat a record like that?"

The second one, who was the owner of a small clothing store, replied: "A lady came in to buy a suit in which to bury her husband. I sold her a suit with two pair of pants."

A man who always felt proud of being an atheist died at a friend's house while on a vist. To give him a decent burial his friend purchased an expensive suit of clothes, floral fixings, etc., then taking a last look as the coffin was being closed said: "All dressed up but no place to go."

No Sheik for This Family!

The Board of Health of Harrison, N. J., recently sent letters to parents asking if they were willing for their children to undergo the Schick test. One disturbed mother replied as follows:

"I refuse positively to permit either of my boys to take the Schick test. I have read the book and seen the play, and want you to know I don't approve of them."

Spring Stuff

To sing of love beneath the bough
And how the vernal urge will get you—
I put it squarely to you now—
What does it net you?

When spring is here and winter's done
Let others grab their lyres and 'ting 'em—
I'll take my golf clubs one by one
And start to swing 'em.

Let others sing of budding love
And all the things that lovers suffer—
With practice I shall rise above
The common duffer.

FUTURE EVENTS

The Annual Reunion of the PHILADELPHIA DENTAL COLLEGE, DEPARTMENT OF TEMPLE UNIVERSITY, will be held in the College Building, 18th and Buttonwood Streets, Philadelphia, Wednesday, April 20, 1927. There will be an essay by Stirling Hewitt on *Bridgework As Viewed By The Medical Profession*, as well as a number of instructive and interesting clinics. The exercises, which will continue all day, will be followed by the annual banquet in the evening.

THE MICHIGAN STATE DENTAL HYGIENISTS' ASSOCIATION will hold its annual meeting on Friday, April 22, 1927, at the Pantland Hotel, Grand Rapids, Mich.

ESTHER F. URBANOWICZ, *Secretary.*

The fifty-seventh annual meeting of the NEW JERSEY STATE DENTAL SOCIETY will be held on April 27-30, 1927, at the Hotel Robert Treat, Newark, N. J.

The Essay Committee has secured V. H. Kazanjian, D.M.D., M.D., Professor of Clinical Oral Surgery, Faculty of Medicine, Harvard Medical School, who will speak on *The Treatment of Post-operative Complications of the Mouth and Jaws;* and James E. Aiguier, Ph.G., D.D.S., Lecturer on Materia Medica and Physics, Dental Department, University of Pennsylvania, whose subject will be *Medicaments—Their Care, Use and Application in Every-day Dental Practice.*

The clinicians to date are John G. Logan, Portage, Pa., who will give a three-in-one clinic on *Bridgework, Platework and Inlays;* Milton Cohen, New York, on *Porcelain Restorations;* Edward F. Sullivan, Tufts Dental College, on *Children's Dentistry;* Charles R. Jefferies, Jr., Wilmington, Del., on *Amalgam Restorations.*

Other essayists and clinicians will take part in what promises to be a record convention.

EDWARD L. WHARTON, *Chairman of Publicity,*
21 Fulton Street, Newark, N. J.

The sixty-third annual meeting of the CONNECTICUT STATE DENTAL ASSOCIATION will be held April 28-30, 1927, at New London, Conn.

The annual meeting of the AMERICAN SOCIETY OF ORTHODONTISTS will be held at the Edgewater Beach Hotel, Chicago, Illinois, May 2-5, 1927. A splendid program has been prepared. All members of the American Dental Association are cordially invited.

CHARLES R. BAKER, *Secy.-Treas.,*
708 Church Street, Evanston, Ill.

The sixty-fifth anniversary meeting of the IOWA STATE DENTAL SOCIETY, which is to be a Home-Coming, will be held May 3-5, 1927, at Hotel Savery, Des Moines. Members and former members of the Society will present the program. A hearty invitation is extended to A.D.A. members, and all dentists who have formerly practised in Iowa are urged to attend.

JOHN SCHOLTEN, *Secretary*,
Cedar Rapids, Iowa.

The fifty-ninth annual session of the PENNSYLVANIA STATE DENTAL SOCIETY will be held in Pittsburgh, May 10-13, 1927.

The general practitioner will be given a veritable postgraduate course in every phase of general practice, while the specialist in any subject will feel that the Program Committee had him especially in mind when they chose the speaker to present his specialty in a general way.

There will be a golf tournament on Monday, May 9, 1927.

All members of the American Dental Association are cordially invited.

Program and full information may be obtained from

A. C. BARCLAY, *Secretary*,
914 Highland Building, Pittsburgh, Pa.

The Forty-seventh Annual Convention of the TEXAS STATE DENTAL SOCIETY will be held at Austin, May 10-13, 1927. Headquarters will be at the Austin Hotel.

A very attractive postgraduate course by expert clinicians has been provided as a special feature of the meeting.

J. G. FIFE, *Secretary*,
Medical Arts Building, Dallas, Texas.

THE CANADIAN DENTAL ASSOCIATION will hold a Diamond Jubilee Convention at the King Edward Hotel, Toronto, Ontario, May 16-19, 1927, on the occasion of the Sixtieth Anniversary of the Ontario Dental Association. A cordial welcome is extended to guests from the United States.

FRED J. CONBOY, *Secy.-Treas.*,
Ontario Dental Association,
Whitney Building, Toronto, Ontario.

The Seventh Annual Meeting of the DENTAL HYGIENISTS ASSOCIATION OF THE STATE OF NEW YORK will be held at the Hotel Statler, Buffalo, N. Y., May 18, 1927. A cordial invitation is extended to dentists and dental hygienists to attend the clinics and literary meetings.

MARY A. OWEN, *Secretary*,
28 Tremaine Avenue, Kenmore, Buffalo, N. Y.

The fifty-first annual meeting of the VERMONT STATE DENTAL SOCIETY will be held at Burlington, May 25-27, 1927.

LLOYD C. ROBINSON, *Secretary*,
Morrisville, Vt.

THE DENTAL SOCIETY OF WESTERN CANADA, which includes Manitoba, Saskatchewan and Alberta, will hold its first meeting under the auspices of the Edmonton Dental Society at Edmonton, Alberta, May 25-27, 1927.

Among the clinicians will be Frederick F. Molt of Chicago; Robert R. Gillis of Hammond, Indiana; Fred J. Conboy of the Ontario Department of Health; and W. I. Ferrier, President of the Washington State Dental Association.

LESLIE H. MCINTYRE, *Chairman of Publicity,*
10189 101st Street, Edmonton, Alberta.

THE IOWA STATE BOARD OF DENTAL EXAMINERS will meet at the State University of Iowa College of Dentistry, Iowa City, Iowa, May 31-June 3, 1927, at 9:00 A. M., for the purpose of examining applicants for a license to practise dentistry in Iowa. An examination for dental hygienists also will be given.

All papers and credentials must be filed with the State Department of Health at least fifteen days prior to date of examination.

For further information and application blanks, address the State Department of Health, Capitol Building, Des Moines, Iowa.

THE INDIANA STATE BOARD OF DENTAL EXAMINERS will hold its next examinations at the State House, Indianapolis, beginning Monday morning, June 13, 1927.

Applications properly executed must be in the hands of the Secretary-Treasurer at least one week before the examinations.

For further information and applications address

J. M. HALE, *Secy.-Treas.,*
Mt. Vernon, Indiana.

The Fifty-ninth Annual Meeting of the GEORGIA STATE DENTAL SOCIETY will be held June 15-17, 1927, at Albany, Georgia.

G. A. MITCHELL, *Secretary,*
Candler Building, Atlanta, Ga.

The meeting of the WYOMING STATE DENTAL ASSOCIATION will be held June 20-21, 1927, at Thermopolis, Wyoming.

E. C. ANDREW, *Secretary,*
Cheyenne, Wyoming.

The annual meeting of the MAINE DENTAL SOCIETY will be held June 21-23, 1927, at The Belgrade, Belgrade Lakes, Maine.

W. F. FOGG, *Secretary,*
Waterville, Maine.

THE CONNECTICUT DENTAL COMMISSION will meet at Hartford, Connecticut, June 23-25, 1927, to examine applicants for license to practise dentistry and dental hygiene and to transact any other business proper to come before it.

Attention of dental hygienists is called to Chapter 2907, Section II, Amended, of the Connecticut Dental Laws, reading as follows:

"From July 1, 1926, every dental hygienist applying for a license shall present a certificate from the state board of education that she has completed a four years' course at an approved high school or has an equivalent academic education.

"No license shall be issued to any dental hygienist unless she shall present a diploma or other certificate of graduation from some reputable institution. The dental commission is authorized to determine the institutions which shall be considered 'reputable institutions' for the purpose of Chapter 153 of the general statutes."

For further information apply to

A. B. HOLMES, *Recorder,*
43 Central Avenue, Waterbury, Conn.

THE UNIVERSITY OF BUFFALO for the second year is offering a six weeks' POSTGRADUATE SUMMER COURSE for dental hygienists. By the advice and through the cooperation of the New York State Department of Education, the following course has been arranged:

Education (Principles of Teaching)
Child Psychology
Public Speaking
Applied Oral Hygiene (Field Problems)
Nutrition

Other related courses in education are available and may be substituted for any of these subjects already taken.

Dr. S. R. Meaker, Supervisor of Oral Hygiene in the State Department of Education, will have personal charge of the course. Other instructors include Dr. Daniel H. Squire, Dean of the School of Dentistry, University of Buffalo, and various members of the faculty; Miss Olive Lester, Instructor in the University of Buffalo; Miss Mary C. Boardman, Dental Hygienist; Mrs. George Skinner, Dental Hygienist.

Classes will be held from July 5 to August 13 as a part of the regular Summer School of the University. Clinical demonstrations will be given at the University of Buffalo School of Dentistry and other institutions.

Further information may be obtained upon request to Dr. Daniel H. Squire, Dean of the School of Dentistry, University of Buffalo, or Dr. S. R. Meaker, State Education Department, Albany, N. Y.

THE AMERICAN SOCIETY OF ORAL SURGEONS AND EXODONTISTS will hold its ninth annual meeting at Detroit, Michigan, October 21-22, 1927. Headquarters will be at the Statler Hotel.

FRANK W. ROUNDS, *Secretary,*
270 Commonwealth Ave., Boston, Mass.

The third annual meeting of the AMERICAN DENTAL ASSISTANTS ASSOCIATION will be held in Detroit, Mich., during the week of October 24, 1927.

MAUDE SHARPE, *General Secretary,*
Suite 1202, 8 West 40th Street, New York, N. Y.

The position of DENTAL INTERN at the Lenox Hill Hospital, New York, N. Y., will be vacant September 1, 1927. The term of service is one year, with full maintenance. Apply in writing, not later than April 15, to

GEORGE F. SAUER, *Supt.,*
112 East 77th Street, New York, N. Y.